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Subterranea

December 2005

Issue 9

In This Issue

Ukraine
Bunker tour

RAF Trimmingham

French Trip
2005

Books, News
and Reviews

The Newsletter of Subterranea Britannica and The Cold War Research Study Group.
www.subbrit.org.uk

Subterranea Britannica is a society devoted to the study of man-made and man-used, underground structures and the archaeology of the Cold War. The main focus of interest is on abandoned and forgotten structures and, in the case of Cold War structures, studies are entirely confined to declassified and decommissioned structures. The society is open to all and its membership includes all walks of life. Members are invited to contribute to this newsletter even if this just means sending very welcome snippets from newspapers and magazines.

This edition edited by Dan McKenzie

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Contents

News	Page	Features	Page
Archaeology	1	Gibraltar stay behind cave	21
Conservation	4	RAF Daws Hill	24
Mines and quarries	4	BBC at Clifton Rocks	30
Museums and heritage	7	Sub Brit Ukrainian tour	36
Societies	7	Mike Barton - Never Again	46
Tunnels	8	RAF Trimmingham	49
		London Calling- the BBC at war	53
Features	Page	What's in a name?	62
Chalk & Cheese Sub Brit in France	11	Subterranea Shop	64

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The committee of Subterranea Britannica and the editor do not necessarily agree with any views expressed and cannot check the accuracy of any material sent in.

Front Cover Photo - The war memorial Sevastopol photo Dan McKenzie Rear cover images around Sevastopol photos by Mark Bennett

News

NEWS - ARCHAEOLOGY

Fourteenth century charnel house re-opened at Spitalfields, London.

Digging new graves in old graveyards in London led, by the 14th century, to the displacement of bones from the earlier burials. These were accommodated in a charnel-house, or sacerd resting place, below the church. An example at Spitalfields which has recently been exposed to view as a result of re-development takes the form of a cell seven metres wide and 13 metres long, and at least four metres deep. The bone-store is now preserved in the basement of a 'vast Norman Foster-designed building' and is visible from a dedicated entrance court and glass viewing gallery. SB members who recall a Bath / Bristol Study Weekend some years ago will remember another well-preserved charnel-house below a city-centre church at the latter place.

Source: ANON, 2005, Medieval bone store re-opened after 300 years. *London Archaeologist* 11(2), page 56.

Underground puzzles in the Orkney Islands

The 'September / October' issue of *Current Archaeology* (actually published in August) contains a number of papers on aspects of archaeology in the Orkney Islands. Especially interesting are the results of investigations of an underground structure, probably mostly if not entirely of cut-and-cover construction, made within a drumlin, a naturally deposited and shaped mound of boulder clay formed in the Ice Age. Mine Howe is eight kilometres south-east of Kirkwall, and comprises a steeply inclined flight of steps within dry stone walls, descending in a flight of 17 steps, followed by another 11 on a different orientation. At the bottom is a tall, narrow chamber a little over a metre in diameter, and about four metres high. This feature was first investigated and excavated in 1946, although it appears that no published report appeared, no archival record is known, and the whereabouts of finds is not now known, underlining all too clearly that archaeological excavation without subsequent detailed publication of results and curation of finds is simply utterly destructive. Reportedly, stone tools were amongst the finds.

In the Autumn of 1999 the current landowner, one Douglas Patterson, initiated a re-examination of the underground feature. Orkney-based archaeologists found a spade and candles left by the investigators in 1946, and their preliminary report has no been published. Their work included a detailed study,

including geophysical survey, of the surrounding land surface, with several surprising results, amongst which were the likelihood of further cavities within the mound, and strong evidence for metal-working. The *Current Archaeology* report includes photographs of the mound in its setting, the interior of the steep flight of steps downwards, the remains of a smithy and a female skeleton found below it, and an iron-smelting furnace.

A much more conventional souterrain on the Orkney island Westray was re-discovered by accident when a covering stone slab fractured under the weight of a tractor, and is reported in the same issue of *Current Archaeology*, as is the investigation of another site, interpreted as an Iron Age 'shrine', which is gradually being lost to cliff erosion on the same island.

Source:

CARD, Nick, Jane DOWNES, Julie GIBSON, and Paul SHARMAN, 2005, Religion and metal working at Mine Howe, Orkney. *Current Archaeology* 199, 322 - 327.

MOORE, Hazel, and Graeme WILSON, 2005, An Iron Age 'shrine' on Westray. *Current Archaeology* 199, 328 - 332 [Scotland: Orkney Islands]

MOORE, Hazel, and Graeme WILSON, 2005, The Langskaill souterraine. *Current Archaeology* 199, 333 - 335 [Scotland: Orkney Islands]

Excavation of cave deposits on Skye

The Isle of Skye has a range of rock types and ages, from pre-Cambrian metamorphic rocks to fossiliferous Jurassic sediments to Tertiary igneous intrusions and lavas. Of particular interest to speleologists, and to archaeologists, are a number of natural solution caves dissolved in the Cambro-Ordovician limestones, a large outcrop of which extends southwards from Broadford and then westwards to Torrinn.

The mostly small natural caves have been investigated by members of the Grampian Speleological Group, and others, for some years. They have now come to the attention of archaeologists, as some contain archaeologically important cave sediments.

Steven Birch (co-director with Martin Wildgoose of the High Pasture Cave Project) and others have been investigating a depth of almost a metre of *in situ* cave deposits in Uamh an Ard Achadh (High Pasture Cave), as well as the archaeology and landscape

News

context of the surface site. The cave, with 320m of accessible passages, was discovered by spelaeologists in 1972, and is the second longest cave complex on the island. He has now published an interim report on their findings in *British Archaeology*.

Apart from bones of the then native fauna, including brown bears and wolves, the late Bronze Age / early Iron Age site has yielded much evidence of human activity, and has been seen as possibly a 'natural' version of the purpose-dug 'souterrains' already well-known in Skye.

Archaeologically useful evidence retrieved includes butchered bones (cow and pig), fish bones, periwinkles, charred grain, bone and antler artefacts, and iron socketed adze, coarse pebble tools, part of a stone rotary quern, iron hammer scale, and possibly late Bronze Age pottery. Radio-carbon dating has produced dates in the range 390 - 160 BC.

Further information can be obtained on the High Pasture Cave Project website www.high-pasture-cave.org.

Source: Steven BIRCH, 2005, Entrance to the underworld. *British Archaeology* 84, page 35.

Stone Age 'Modern Art' reported from a Cheddar Gorge cave, (Somerset)

Following the reporting of internationally important cave art in Church Hole Cave, Creswell Crags (see *Subterranea* 8), spelaeologists and archaeologists countrywide are scrutinising cave walls and ceilings in the hope of discovering more ancient man-made scratchings. The latest report received is of 'abstract art' found scratched on the wall of Long Hole Cave, closely associated with the better-known Gough's and 'Cheddar' Caves in Cheddar Gorge in the Mendips. The area is, of course, famous for undoubted ancient remains of human cave use.

A photograph of the new discovery, published in *Current Archaeology*, shews a quite accurately drawn square formed by four sets of horizontal and vertical scratches, which might fancifully be seen as a preliminary sketch for one of the tri-lithons at Stonehenge!

Source: Graham MULLAN and Linda MILSON, 2005, Mesolithic engravings at Cheddar Gorge. *Current Archaeology* 199, 360 - 361 [Also a report in *The Guardian*, 18 August 2005, page 6]

Archaeological evidence preserved in well sediments

The face of Britain is, of course, littered with wells of a wide range of dates, the earlier ones being simple draw wells, worked manually with a bucket and maybe some sort of rope or windlass. Two such dating from the Iron Age have just been reported from Burlescombe in Devon.

Simple pumped wells, worked by lift-pumps (and thus by atmospheric pressure), were limited in depth of under 30 feet. Manually worked wells, on the other hand, could be made very much deeper, depending on the skill of the well-sinkers. Our Honorary Member Harry Pearman, decades ago, was closely associated with the excavation of a Roman well at Findon, on the West Sussex South Downs, which was of the order of 200 feet deep.

Wells either work as sumps, in impermeable rock, collecting surface water. Or are sunk below the local water table, and thus kept supplied by water seeping in from the adjoining strata. If not worked, and if the local water table does not fall below the bottom of the well, they remain in water which, in the early wells, will only be a foot or so deep. And for as long as the top is left open, assorted organic matter, from fallen leaves to deliberately dumped rubbish accumulates in them, and is often exceptionally well-preserved as a result of the waterlogged anoxic conditions. By this means deposits of archaeologically significant material may be preserved in districts where the geology and soil chemistry, or human activity at the ground surface, have prevented such preservation. The conditions at the bottom of some such wells lead to the preservation of otherwise very rare artefacts. A sort of archaeological equivalent of the much older fossil fauna of the Burgess Shales so well-known to geologists.

Britain's oldest leather shoe, a unique survivor from the Iron Age, has now been reported from one of a pair of Iron Age wells at Burlescombe in Devon. And Dr. Yvonne Edwards, of the Institute of Archaeology, is currently identifying suitable wells and other locations throughout Greater London from which she hopes to retrieve stratified waterlogged organic deposits which might contain pollen sequences which would reveal changes in the local flora, and thus climate, over a long period of time.

Source: Stephen REED and Jo BEST, 2005, Britain's oldest shoe - and two wells. *Current Archaeology* 199, 318 - 319.

News

The Silbury Hill tunnel to be re-opened, recorded, and back-filled

Silbury Hill, part of the World Heritage Site at Avebury (Wiltshire), is a man-made mound of chalk some 40 metres high, thought to have been made around 2,700 BC and has been described as 'Europe's largest barrow' (burial mound.)

A number of archaeologically controversial, as destructive and inadequately recorded, excavations have been made within the mound, including a vertical shaft, and a horizontal tunnel, both to examine the internal structure and possibly contents. These caused the collapse of a part of the top of the mound, forming a small crater, and may well have prejudiced the preservation of important evidence for the ecology of the landscape in which the mound was built.

The most recent intervention was the tunnel made by Richard Atkinson (in partnership with the BBC) in 1968 - 69, with the permission unwisely granted in the opinion of some archaeologists) by the predecessors of English Heritage, who now oversee the care of the monument.

Current proposals are to re-open Atkinson's tunnel, sample and record the chalk penetrated to satisfactory modern standards, and then back-fill it to prevent further settlement and damage to the remainder of the mound.

Source: ANON, 2005, Good news for Silbury Hill - if money is found. *British Archaeology* 84, page 6.

Stonehenge visitor centre and road tunnel plans back to Square One

Stonehenge, as a monument, is far more than a circle of large stones. It is merely the centre of a much larger man-made landscape, parts of which have had major roads built across it, as well as containing land used for Army purposes. As one of Britain's world-famous monuments, its current visitor centre cum car park cum ticket office is generally recognised to be a national disgrace. When I last visited, the entrance was by way of a crumbly car park and some very prominent large dustbins! Would any other nation present the jewel in its archaeological crown in so tatty a way?

There have been imaginative, and necessarily expensive, schemes to remedy this situation over the years, to enable those visiting the stones to fully appreciate their setting in this larger landscape. These have included re-siting the visitor centre, and

re-routing the A334 road either further away or in a tunnel. A relatively short and inexpensive cut-and-cover tunnel would of course have destroyed the surface archaeology throughout its width, and its length including approach cuttings. A deep-level and longer bored tunnel would be less destructive, but cost far more. Studies, reports, and recommendations have flown back and forth.

The entire question is now back to square one, as on 26 July 2005 the local Planning Authority turned down English Heritage's application for permission for its proposed new visitor centre, six days after the Department for Transport asked for yet another review of the road proposals for the area.

So, the tatty approach to our World Heritage Site remains for the time being, and Wiltshire will not in the short term have a new road tunnel of any type or length.

Source: ANON, 2005, Objectors scent victory at Stonehenge. *British Archaeology* 84, page 8.

Ironstone mining at Buck Haw Brow, Giggleswick, North Yorkshire

Investigations at a minor ironstone mining site on the North Yorkshire boundary near Giggleswick (SD 79314 66125) have been reported. The land was a part of the Furness Abbey's estate in the Middle Ages. Two mineral veins outcropping in the area have been investigated, and linear opencast excavations and possible deeper pits reported. Nodules of limonite have been found.

Source: Phil HUDSON, 2005, Iron mining on Buck Haw Brow. *Industrial Heritage* 31(2), 37 - 41 [North Yorkshire: Giggleswick]

Gold hoard retrieved from tomb in Bulgaria

Bulgaria's rich archaeological heritage has yielded a 4,200-year-old gold hoard from an ancient tomb some 75 miles from Sofia. Fortunately, the finders were archaeologists rather than tomb-robbers, so the find will add to public knowledge and understanding of this country as it was some thousands of years before it fell to communism. The hoard, including around 15,000 ornate gold rings, is reported to include some of the oldest finds from the country, perhaps from a race of men earlier than the Thracians.

Source: Helena SMITH, 2005, Bulgaria unearths huge hoard of gold. *The Guardian*, 18 August 2005

News

Egyptian sea-going ship remains found in a Red Sea cave

The remains of ancient Egyptian sea-going ships, the first known, have been reported found sealed up in two man-made caves at Wadi Gawasis on the Red Sea coast.

Timber (possibly oars), pottery, and rigging possibly dating from the 15th century BC have been reported.

Source: ANON, 2005, Ancient ship-in-a-cave. *Descent* 185, page 7.

NEWS - CONSERVATION

Dorset bunkers adapted for bats

The Ministry of Defence conservation magazine *Sanctuary* reports on a recently conducted survey by Robert Stebbings Consultancy Ltd of bats in, and the suitability for bats of, bunkers and farm buildings at Lulworth Ranges, Dorset. Two Greater horseshoe bats were recorded in one of the bunkers. This rare species requires undisturbed barns or roof spaces for summer maternity roosts, and caves, mines, or other underground locations for winter hibernation. Recommended works to improve bunkers as hibernation sites included the clearance of brambles from entrances, building breeze-block walls near entrances to deflect light, fixing plastic mesh on ceilings, and fixing wooden boards to walls behind which bats can hibernate. The horseshoe bats hibernate hanging free, hence the plastic mesh to provide footholds. Other species squeeze into narrow crevices, such as those behind the intended wooden boards.

Members are reminded that disturbing hibernating bats, including shining lights at them and flash photography, is illegal, *and may be as lethal to the animals as battering them to death*. If you see a hibernating bat, walk away. Even standing underneath a hibernating bat may endanger it, as warm air rising from your body may initiate the irreversible process of waking from hibernation, using up energy stores which it will not be able to replace as a result of the lack of flying insects, as food, in the winter.

Source: Cora TAYLOR and Sue MOORE, 2005, Batty about old bunkers. *Sanctuary* 34, 54 - 55.

Box quarries, Wiltshire, to be gated

The very extensive underground quarries at Box, Wiltshire, have effectively open to all comers, without

formality, for many years. They are, however, an important bat hibernation site, and thus subject to wildlife conservation legislation. The quarry contains over 90 km of passages, much of which can be walked in comfort. Seven species of bat hibernate here in the winter months, and it is now proposed to regulate access in the hibernation season (about October to March) as the lives of hibernating bats are threatened by disturbance (if they are disturbed and come out of hibernation they are liable to find insufficient food supplies to sustain them, which is why they hibernate in the first place, so they are liable to die of starvation.)

It is proposed to gate the several accessible entrances, to have a central key-holder, and to regulate access, with only licensed bat workers allowed in during the hibernation season, for monitoring purposes. It is expected that *bona fide* speleologists and industrial archaeologists will still be able to visit the quarries during the rest of the year, by arrangement.

Further information on the Box Mine SSSI can be found on the English Nature website (Special Sites section) at www.english-nature.org.uk.

Source: ANON, 2005, Changes coming to Box. *Descent* 185, page 22.

NEWS - MINES AND UNDERGROUND QUARRIES

Fake mine-shaft at Bolton, Lancashire

Bolton Council, Lancashire, has reversed an earlier decision that a fake mine-shaft excavated in his back garden by the late Fred Dibnah is to be filled-in. The 21 metre (70 feet) shaft, equipped with a 30 foot winch wheel and winding house, had been constructed 'to celebrate Bolton's links with mining.'

Source: Helen CARTER, 2005, Dibnah's mineshaft can stay, says council. *The Guardian*, 26 November 2005, page 11.

Yoxter mines, on Mendip, Somerset

Investigations at the Yoxter mines, on the Yoxter firing ranges near Priddy (Somerset) have been reported. Three shafts were bottomed to 10m, m and 4m, but no entry to significant workings was made. A fourth shaft, to dangerous to descend, was plumbed to 8m. Two short galleries proved to be blocked by fallen roof.

Source: ANON, 2005, Yoxter mines. *Descent* 185,

News

Neptune Mine, Peak District

Entrance to the blocked adit at Neptune mine in Cressbrook Dale, in the Peak District, was effected in the mid-1970s, but has not been possible for some years as the tunnel mouth fell in again in the 1990s. This was cleared, but collapsed again within a few years. The adit entrance has now been cleared and stabilised once more.

Source: Ralph JOHNSON, 2005, Third time lucky - we hope. *Descent* 185, page 18.

Mining subsidence in Cumbria and Wales

At Egremont, in the ironstone-mining district of Cumbria, eight houses have had to be evacuated as a result of the appearance of a hole nine metres across in one of the gardens. This rapidly filled with rust-coloured mine-water, thought to have come from the flooded Wyndham mine.

A ten-metre deep shaft has appeared in a garden near Aberystwyth, close to the door of a pensioner's house. The area is known for its lead and silver mines, last worked in the 19th century. The possible cost of filling the collapse has been estimated as up to £ 80,000.

Source: Chris HOWES, 2005, Mining subsidence. *Descent* 185, page 22.

Bad news for home-owners in the Coley chalk mining district of Reading

Several houses in Field Road, western Reading, collapsed as a result of subsidence caused by forgotten chalk mines 2001. Cavities were detected, mapped (from the surface only) and infilled at great expense, and the houses rebuilt. Subsequently the mining subsidence problems have been shewn to be more extensive than first thought. A further programme of investigations is now in progress, in the adjoining areas. A 15ft 'cavern' was detected at a depth of 33 feet under the garden of nearby Clevedon Lodge, Castle Hill, in July 2005. Owners of property have been recommended to discuss the financial implications of mining subsidence with their own insurers, and warned that compensation for damage may not be guaranteed from local or central government funds.

Source: Linda FORT, 2005, Householders: may have to fund remedial work themselves. Chalk mine houses not guaranteed aid. *Reading Evening Post*, 25 August 2005.

The Bouillet salt mine at Bex, Switzerland

The Bouillet salt mine at Bex (pronounced 'bay') in Switzerland has been open to tourists since 1984. It lies a few kilometres to the south of Montreux, at the eastern end of Lac Léman (Lake Geneva.) From the station at Bex there is a dedicated minibus link to the mine entrance, where there is the usual café and gift shop. Inside the mine, about 1.5 kilometres into the mountainside, there is a miniature railway, and a café. The guided tour lasts some two hours.

The mine is reputedly named after a shepherd, Jean du Bouillet, who in the 15th century discovered salt springs here. Commercial exploitation of the springs commenced in 1534, when brine was led via wooden conduits to wood-fired evaporation tanks. Mining commenced in the 1680s, when tunnels were first driven into the mountain. Shafts up to 215 metres deep were dug. Much of the salt has evidently been extracted by solution mining, fresh-water being deliberately introduced by way of boreholes, and old galleries and shafts deliberately flooded to leach out the salt from the beds intercalated with anhydrite and marl. Large mined-out chambers and underground brine reservoirs (of which there are seven in all) are visited during the public tour. There are also underground museum displays *en route*. The mine is still in production, in areas not open to the public, and had seven miners employed in 1990, producing 40,000 to 50,000 tonnes of salt *per annum*. It has an estimated productive life of another 200 years.

Source: Trevor GREENSMITH, 2005, The salt mines of Bex. *Geologists' Association Magazine* 4(4), 8 - 9.

Metalliferous mining prospects at Skaergaard, East Greenland

Exploitation over 20 years of a low-grade high-volume deposit for copper, gold, palladium, titanium and vanadium by underground mining in an exceptionally remote area in East Greenland is in prospect, with mineral extraction and processing all underground commencing perhaps in 2009. The products yielded by processing of 10 millions tonnes per annum of rock could bring economic self-reliance to Greenland, which is at present heavily subsidised by Denmark.

The host rock is a series of precious metal rich bands throughout a thickness of 40 metres within the Skaergaard igneous intrusion, a mass of gabbro and related rock types. These layers have been intensively studied on and off since 1986, with to date 16km of drill core samples taken.

Skaergaard is in Kangerlussuaq fjord, although the

News

proposed mine entrance is expected to be from the nearby Miki fjord. Until recently there has been no infrastructure in this area, although there is now a gravel runway for STOL aircraft. Access by air or by sea is easiest from Iceland, some 320 kilometres away, especially as from July onwards there is now, thanks to global warming, a much reduced amount of East Greenland pack ice. The nearest settlements in Greenland are at Ittoqqortoormiit (Scoresbysund) 500 kilometres to the north-west, and Tasiilaq (Ammassalik) 400 kilometres to the south.

The geology of Skaergaard was first examined by L.R. Wager and W.A. Deer in the 1930s, and published in 1939. The Skaergaard intrusion is a classic example, familiar from textbooks to all students of geology, of mineral differentiation (effectively fractional crystallisation) within a magma chamber. It consists of some 280 cubic kilometres of basic igneous rock, with an outcrop at surface extending to 70 square kilometres. Associated with it is a mass of basalt lava flows up to seven kilometres thick, covering an area of 60,000 square kilometres. Amongst the scarcer minerals here are numbered skaergaardite (PdCu), zvyagintsevite (PdPb), keithconnite (Pd₃Te), and melonite (NiTe₂)

Source: Kent BROOKS, 2005, The Skaergaard intrusion: from icon to precious metal deposit. *Geology Today* 21(6), 218 - 221.

Penal Colony YaG 14/10 at Krasnokamensk uranium mine, Siberia

Krasnokamensk, a town of 60,000 people in Siberia near the Chinese border, was built to serve a uranium mine and is now the location of Russia's penal colony YaG 14/10, and is described (with a photograph of the perimeter fence) in a recent article in *The Guardian*. Winter temperatures fall to as low as -40 °C. This is currently the home of Mikhail Khodorkovsky, a former billionaire, imprisoned for fraud and tax evasion.

Source: Tom Parfitt, 2005, Welcome to penal colony YaG 14/10. Now the home of one of Russia's richest men. *The Guardian*, 25 October 2005, page 3.

Men trapped by flooding underground a colliery in China

A flood trapped 103 coal-miners underground at the Daxing coal mine, near Xingning City in Guangdong Province, China, bringing the total of colliery-related deaths to 2,700 to August in 2005, and twice the number of accidents for the same period in 2004, when over 6,000 deaths were caused by

underground explosions, flooding, and roof-falls. The Chinese authorities have closed down a number of small privately-owned coal mines, although some of these have been re-opened illegally.

A subsequent report indicated that it was feared that 102 trapped miners were feared to be dead. Water levels in the pit had failed to fall.

It was further reported that in July 2005 16 men were killed by flooding underground, also in Xingning. And there was news of an explosion killing 14 at another colliery. The latest reported number of coal-mining fatalities for 2005 was stated to be 2,700.

Source: ANON, 2005, 100 trapped in flooded coal mine. *The Guardian*, 8 August 2005, page 12.

Source: ANON, 2005, 102 miners feared dead in China. *The Guardian*, 9 August 2005, page 11.

Another colliery explosion in China: 134 dead and 15 missing

An explosion at the Heilongjiang Longmei colliery in Heilongjiang Province, China, has killed at least 134 miners, leaving another 15 unaccounted for. The mine's ventilation system was put out of action. The previous months five lives were lost in an explosion at a petrochemical plant which also polluted the local river and left millions of people without a mains water supply for more than four days.

Source: Jonathan WATTS, 2005, China: mine explosion kills 134 and leaves 15 missing. *The Guardian*, 29 November 2005, page 16.

Over a quarter of coal mines in China to Close

About 7,000 coal mines in China, over a quarter of the total, are expected to be closed on safety grounds. The mines, mostly the smaller concerns, are expected to be forced to cease production by the end of the year, and will not be allowed to resume work until they have reached national safety standards. The death toll from colliery accidents, with 2,672 miners killed in the first six months of 2005, is reported to be 33% higher than for the same period in 2004.

Source: Jonathan WATTS, 2005, China shuts 7,000 pots in safety drive. *The Guardian*, 1 September 2005, page 14.

News

NEWS - MUSEUMS AND HERITAGE

Big Pit (National Mining Museum of Wales) wins award

The National Mining Museum of Wales, at Blaenafon, within the Blaenafon World Heritage Site, has been awarded the prestigious Gulbenkian Award for Museum of the Year - which includes a prize of £100,000.

The former colliery was refurbished with the aid of a £7m grant in 2004. It is proposed to extend the museum's educational facilities, as around 40% of the 141,000 visitors each year are school groups. As a national museum, Big Pit makes no charge for entry, even for the underground tours.

Source: Chris HOWES, 2005, Big Pit comes top. *Descent* 185, page 22.

NEWS - SOCIETIES AND THEIR PUBLICATIONS

The Peak District Mines Historical Society - British Mining special issue 'Mines, quarries and murderers in the Peak District'

An entire recent issue of *British Mining* is devoted to 'A study of suspicious deaths and human remains associated with past mineral working activities' by Roger Flindall. This is based on reports of bodies or skeletons found in mines and mine-shafts, and in some natural caves or fissures, in the Peak District, and on archival and printed sources (including newspapers) for the two and a half centuries leading up to 1900. 20th century incidents are not included, in deference to the feelings of surviving relatives of victims or murderers.

The author reviews the dating of human remains, and means of distinguishing the results of mining or other accidents, suicides, and murders. Specific cases are discussed, and full references provided for sources of information. The question whether victims or murderers were local or from outside the area is considered.

Source: Roger FLINDALL, 2005, Mines, quarries and murders in the Peak District: a study of suspicious deaths and human remains associated with past mineral working activities. *Mining History* [Bull. Peak District Mines Historical Society] 16(1)(Summer 2005): [iv] + 39pp [Peak District Mines Historical Society Ltd, Peak District Mining Museum, MATLOCK BATH, Derbyshire DE4 3NR]

The Charles Close Society for the Study of Ordnance Survey Maps

Maps and military matters are of considerable interest to many Subterranea Britannica members. The publications of the Charles Close Society for the Study of Ordnance Survey Maps may be found very helpful.

The Charles Close Society's latest issue of its periodical *Sheetlines* (issue 73, August 2005) includes for example the following papers:

John DAVIES, 2005, Uncle Joe knew where you lived: the story of Soviet mapping of Britain (Part II.) *Sheetlines* 73, 6 - 20.

John DAVIES, 2005, Visit to Defence Geographic Centre, Feltham, 15 April 2005. *Sheetlines* 73, 3 - 4.

J.L. CRUICKSHANK, 2005, The Reichsamt für Landesaufnahme and the Ordnance Survey: a comparison of two mapping organisations between 1919 and the Second World War (Part II) *Sheetlines* 73, 39 - 52.

Mike NOLAN, 2005, The BCS Historical Military Mapping Special Interest Group. *Sheetlines* 73, page 2 [BCS = British Cartographic Society]

John Davies' article concludes that the USSR mapping of Great Britain was not simply a question of reprinting existing Ordnance Survey sheets. The Soviet sheets, generally of an astonishingly high degree of accuracy and presentation, include details which had not at the date in question ever appeared in Ordnance Survey mapping.

Some errors are interpreted as the result of misinterpretation of aerial photography. And some detail is thought to have come from first-hand observation by Soviet agents.

The CCS, also, publishes the highly recommended *Ordnance Survey maps: a concise guide for historians*, by Richard Oliver [ISBN 1-870-59824-5], of which the second edition was published earlier in 2005.

For details of the CCS visit www.charlescloseociety.org.uk

Source: CHARLES CLOSE SOCIETY, 2005, *Sheetlines* 73: 68pp

News

NEWS - TUNNELS

Prisoners tunnel out of Escuintla Prison, Guatemala

Nineteen convicted murderers, rapists, and other prisoners have escaped from the , Escuintla Prison in Guatemala by tunnelling 120 metres under an electric fence.

SOURCE: ANON, 2005, Guatemala: prisoners tunnel 120 metres to make escape. *The Guardian*, 24 October 2005, page 16.

Waterloo & City Railway to close for five months in 2006

London's Waterloo & City line will close for five months from 1 April 2006 for engineering improvements.

SOURCE: ANON, 2005, Waterloo & City line closure. *Modern Railways* 62(685), page 8 [Closure planned for five months from 1 April 2006 for engineering improvements]

New Florence Station

In just 5 years time there will be a sensational new way to arrive in Florence. For the design of its new station, Florence has turned to British Architect Sir Norman Foster. More than half of the high speed line from Bologna is in tunnels and the new station will sit in a giant excavated 'box' 450m long, 25m deep and 50m wide rather like Foster & Partners' underground station at Canary Wharf.

London's Northern Line trains service suspended

The Northern Line on London's Underground was completely shut down on and from the late evening of 13 October 2005, and not expected to re-open until concerns about the trains' braking system had been resolved. The private company Tube Lines has been criticised for failing to tackle the problem. The line's 660,000 passengers each day have had to find alternative routes. Some expected substitute bus services failed to materialise. The Union, ASLEF, has criticised privatisation of London Underground maintenance as the cause of the problems.

SOURCE: Ross LYDALL, Oliver FINEGOLD, *et al.*, 2005, Tube chaos as line is closed. Drivers refuse to take out trains. Northern line 'shut for days.' *Evening Standard*, 13 October 2005, pages 1, 4 - 5 and 12 [Line closed as a result of concerns relating to the trains' braking systems]

Ramsgate Harbour Tunnel Railway, Kent

When the railway lines serving Ramsgate were rationalised in 1926, the former standard gauge line through the 1,124 yards Ramsgate Harbour tunnel (on a gradient of 1 in 75) was closed, as was the terminus it served. Running steam-hauled trains up and down such a steep gradient into such a cramped terminus on the sea front was awkward, and eliminated by re-routing trains on a through line with a new main station further inland, as now. Ten years later, the lower two-thirds of the disused main line tunnel was incorporated into a new narrow gauge line linking a new station at Hereson Road (near the new main line station at Dumpton Park) and a new length of narrow-gauge tunnel with a new station at the harbour. Trains commencing at the harbour would thus ascend the lower part of the old tunnel, and then branch off up steeper track (1 in 15) through a much smaller tunnel to emerge at Hereson Road, where connections could be made with main line trains, or passengers could reach the nearby race course. The entire length of this essentially touristic railway, other than the stations at each end, was thus in tunnel, with a length of 1,144 yards. The line was electrically operated, with overhead power lines as used by street tramways. The railway operated from 1936 to 1939, when it was closed on account of World War II. During that war, the main tunnel, at least, was used as a deep air-raid shelter, with additional entrances made via stairways from the streets above. There was also a connection from the lower part of the main tunnel through the western tunnel wall to Ramsgate's extensive system of specially dug deep air raid shelter tunnels in the chalk under the town.

The tourist railway re-opened in 1946, was closed again in 1957 as a result of a cliff fall, reopened in 1958 but closed for good in 1965 as a result of one of the two electric trains crashing through the lower station wall. To make the railway a touristic attraction in its own right, the larger part contained lighting and tableaux of scenes from around the world, and advertised itself as the World Scenic Railway.

The main line tunnel was, and still is, a brick-lined double-track tunnel. The additional length of tunnel to Hereson Road is concrete lined, of much smaller dimensions, and accommodated only a single narrow gauge line. Members of Subterranea Britannica have twice had the good fortune to visit the railways and air-raid-shelter tunnels, although currently all points of access are sealed and visits are not encouraged.

A new booklet has recently been published describing the history, construction, evolution, and ultimate fate of the tourist railway (but not of the deep air raid shelter tunnels in the chalk.)

News

Peter A. HARDING, 2005, *The Ramsgate Tunnel Railway* [ISBN 0-9523458-9-7] published by the author and available from him for £4 inclusive of post and packing from Mossgiel, Bagshot Road, Knaphill, WOKING, Surrey GU21 2SG. Peter Harding also offers titles on 18 other small railways in southern and south-eastern England, including a number of military and narrow gauge lines.

31 mile walk through Channel Tunnel?

A man has claimed he has walked the 31 miles through the Channel Tunnel to arrive in France, and has been remanded in custody charged with endangering life by being on a railway line. He appeared before magistrates in Folkestone on 11 October 2005. Eurotunnel said he may have taken advantage of a 'brief malfunction' in the surveillance system.

Source: ANON, 2005, Man in flipflops says he walked through Chunnel. *Daily Telegraph*, 12 October 2005, page 10.

Job losses at Eurotunnel

Nine hundred jobs at Eurotunnel are being cut under a voluntary redundancy programme, reducing the company's British and French staff to about 2,300. This is slightly higher than the staffing level in 1994 when services between London and Brussels and Paris commenced. The company is discussing with its creditors its £ 6bn debt.

Source: ANON, 2005, Transport: 900 jobs to go at debt-laden Eurotunnel. *The Guardian*, 21 October 2005, page 29.

Engelberg railway (under construction) flooded (Switzerland)

Work on a new railway tunnel at Engelberg (Switzerland) has been halted until the winter, as a result of flooding following storms during the three days 21st - 23rd August 2005. The work site was evacuated on 23rd after 500 to 1,000 litres of water per second flowed into the tunnel, damaging the structure and installed services. The tunnel portal excavation was filled with gravel.

Source: ANON, 2005, Waterloo & City line closure. *Modern Railways* 62(685), page 8 [Closure planned for five months from 1 April 2006 for engineering improvements]

Soumange railway tunnel progress (Belgium)

A new high speed railway line to link Brussels and Liège (Belgium) with Aachen and Köln (Germany) runs to the north of the existing route via Verviers and Welkenraedt, and is expected to reduce Liège - Köln transit times from 85 to 58 minutes. The new line includes the 6,530m Soumagne tunnel, which was opened to the public on 23rd and 24th September, allowing 25,000 members of the public to walk or ride through. The western portal is at Vaux-sous-Chèvremont, about six kilometres south-east of Liège, and the eastern one at Ayeneux, to the west of Soumagne.

The tunnel was dug from four faces, from the two portals and from the bottom of a 30 metre diameter / 30 metre deep shaft at Bay Bonnet.

Source: ANON, 2005, Soumange tunnel progress. *Modern Railways* 62(685), page 64.

Bank robbery tunnel in Brazil

Thieves took three months to tunnel at least 200 metres below two city blocks (or 80 metres below one block, according to *The Guardian's* report) to steal Reals 156m (£ 38m) from a branch of the Brazilian Central Bank in Fortaleza, in the north-eastern state of Ceara. Their tunnel started in a rented house which they disguised as a horticultural business, passed three metres below the Stock Exchange, and broke through the two metre thick floor of the bank vault during the weekend of 6 / 7 August 2005. It was 70cm wide, provided with electric lighting and ventilation system, and reinforced with wood and plastic. In a similar robbery last year, more than \$ 1m was stolen from the Sao Paulo Company, employed to convey cash between banks. The suspected mastermind in that case had reportedly escaped from prison three years earlier by tunnelling out. The Fortaleza raid netted the largest haul of stolen cash in Brazilian history. The biggest bank raid in history was in Nazi Germany in April 1945 when gold estimated to be worth £ 2.25bn was stolen from the Reichsbank in Berlin.

Source: ANON, 2005, Tunnel gang steal £ 38m from bank after three-month dig. *Evening Standard*, 9 August 2005, page 8.

Source: ANON, 2005, £ 39m taken in Brazil bank raid. *The Guardian*, 9 August 2005, page 11.

Source: Tom PHILLIPS, 2005, Brazilian police hunt tunnel gang behind £ 38m raid on bank. *The Guardian*, 10 August 2005, page 11.

News

Tesco's collapsed tunnel at Gerrards Cross, Buckinghamshire: further details

The *Evening Standard* of 9 August 2005 published a photograph of the interior of the collapsed tunnel (in fact a covered-over railway cutting) at Gerrards Cross. The accompanying text states the tunnel to have been 20m wide, but only 6.9m high.

Railway services over this part of the route were suspended, passengers having to suffer emergency bus services, while the safety and future of the collapsed tunnel was assessed. Whether the entire structure would be removed, or the remaining part declared safe, remained to be seen; likewise the future of the intended Tesco supermarket and car park which was intended to be built over the cutting at this point.

Subsequently it was reported, in *The Guardian*, that Tesco was having to find £ 8.5m to compensate the Chiltern Railways company and its 30,000 passengers each day, whose journeys to and from London have taken an hour longer than usual. Fares on all journeys were halved by the railway company, Tesco paying the other half. The supermarket has also had to pay out £ 3m in compensation to rail season ticket holders, and £ 1.5m for the hire of buses in substitution for trains. They will also pay for an advertising campaign to win passengers back to rail once the blocked line is cleared.

Some 10% of the length of the tunnel actually collapsed. All spoil has now been removed from the track, as well as all spoil placed above the tunnel arches. The remaining concrete arches remain in situ and have been declared safe, and it seems to be a possibility that these will remain a very visible reminder of a spectacular engineering failure, as it is now possible the supermarket above the railway may never be built.

Source: Dick MURRAY, 2005, Inside the collapsed Tesco train tunnel. *Evening Standard*, 9 August 2005, page 19.

Source: Paul BROWN, 2005, £ 8.5m bill for collapse puts Tesco store in doubt. *The Guardian*, 19 August 2005, page 12.

Death in fire in Channel Tunnel Rail Link tunnel under the Thames

An accident and fire in a tunnel under construction under the river Thames, on Section II (not yet in service) of the Channel Tunnel Rail Link to London St. Pancras is feared to have caused the death of a

man working there.

Source: Collin BLACKSTOCK, 2005, One feared dead in Channel Tunnel fire. *The Guardian*, 17 August 2005, page 7.

Queensway Tunnel Walkways

An underground complex of walkways, refuges, and escape routes has been built beneath the heavily used Queensway Tunnel linking Liverpool to Birkenhead.

It is designed to act as a safe refuge in the event of a major incident in the 71-year-old tunnel, such as a fire or toxic spillage.

Seven refuge points have been built, at regular intervals, throughout the tunnel. In an emergency, a public address system and flashing arrows direct people to the nearest escape route, which is protected by fire-resistant doors. They are then led down a brightly-lit corridor to a bunker, each capable of taking 180 people, which is connected by two-way CCTV with the Mersey tunnel police control room.

Depending on the severity of the incident, people will then remain in the refuge until the tunnel is declared safe, up to a maximum of four hours.

But in extreme cases they will be led along a central avenue running directly underneath the road which links all the refuges and leads to two escape entrances outside the tunnel at Liverpool's Pier Head, or Shore Road in Birkenhead, whichever is nearer.

Each refuge is supplied with bottled water and an accessible toilet along with some seating.

The central avenue running beneath the road deck was originally built for trams but was never used.

From Liverpool Echo 26th October

Dog finds labyrinth

Builders resurfacing the car park of the old vicarage in Zetland Street, Wakefield, West Yorkshire, came upon a mysterious hole on July 11th 2005, reviving the rumour of a series of tunnels linking the Vicarage to the Cathedral and possibly extending as far as the River Calder. Dave Wiper of the Modern Savage Tattoo Parlour, one of a number of shops based in the building, fell down the hole after chasing a friend's dog and ended up in the Masonic Lodge across the road.

"The dog, Sandy, is a trained ratter and the next thing I knew she was making the hole bigger and then disappeared down it" he said. "When I went in after

News

her I found myself in a 16th Century cellar and couldn't see a thing, so I felt my way along a wall which went on for ever, then I heard the dog running around in front of me. I thought I had fallen into a crypt because I knew there used to be a graveyard nearby, but then I felt a light switch. I turned it on, realised I was somewhere I shouldn't have been and made a quick exit."

The ancient warren has been a secret known to the Freemasons for many years.

A small stone staircase in the cellar of the Zetland Street lodge which is built on the site of the old rectory, leads further underground to the first of a series of rooms with passageways leading off them. Some of them have been bricked up but a local Mason is certain that one leads to the Cathedral. He believes that they were escape routes for non-conformists following the passing of the Act of Uniformity in 1662.

Swiss Underground station

The Swiss government has given the green light to one of the world's most extraordinary engineering projects: the excavation of a giant railway station, 2,600 feet below the ground, served by high-speed trains capable of reaching London in only a few

hours.

The underground station, to be called the Porta Alpina, will lie near the midpoint of the world's longest railway tunnel, the 35-mile-long 'Gotthard Base Tunnel', currently being dug through the Alps south of Zurich. Work on the £3.5 billion tunnel project began in 1998, and is already more than half completed.

The station will be linked to the surface by the world's longest passenger lift, whisking passengers from a Eurostar-style train to the surface in seconds.

The Porta Alpina, first proposed by a visionary Swiss engineer in 1947, is in effect a clever add-on to the Gotthard Base Tunnel. The original plans for the tunnel already included a modest emergency station deep in the mountain, served by 2,600ft-deep escape shafts.

Those shafts have already been dug, and currently allow access for tunnellers to the heart of the mountain range, so they can burrow away at the Gotthard from within as well as from each end, dramatically shortening construction time.

From Daily Telegraph 21.10.2005

Chalk and cheese

The Sub Brit northern France excursion - Saturday 28th to Monday 30th May 2005

May 2005 saw 41 members, the highest total to date, enjoying the seventh Subterranea Britannica mainland European long weekend, most ably organised yet again by Linda Bartlett and Martin Dixon. In the early years, many of the sites visited were open to the general public, although no less interesting for that. Not a few were recommended by your chairman, from previous knowledge. The emphasis has now changed to non-public sites, where special arrangements are made for access. Linda and Martin have built up a network of contacts in France (and Belgium and the Netherlands) and continue to find new and exceptionally interesting sites. This year, too, we benefited from their following up more or less vague leads supplied by the writer, allowing us access to interesting places at Montreuil-sur-Mer and at Lezennes, a suburb of Lille. We were based, as on some previous occasions, at Hotel Ibis in Arras.

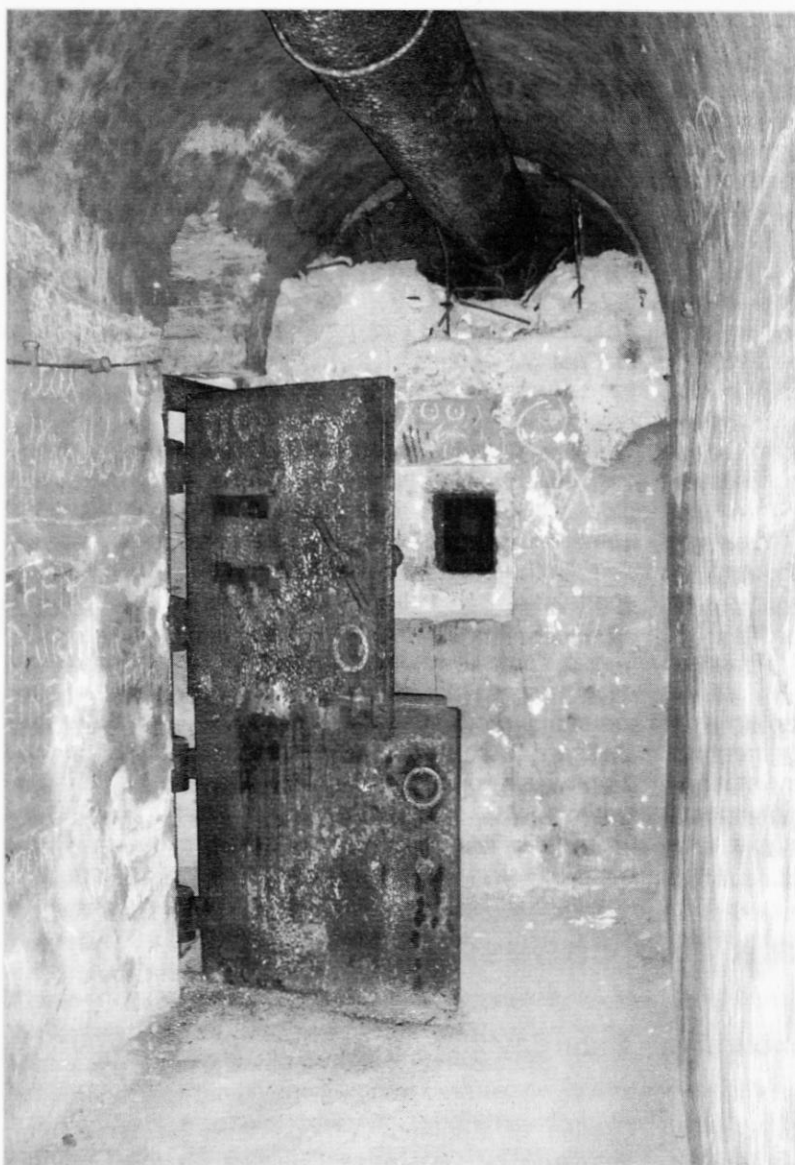
The usual suspects, and some welcome new faces, assembled outside Ashford Town Council's and Southeastern Railways' attempt at a gateway to the

Garden of England in good time for an 8 a.m. departure by Crosskeys Coaches on the Saturday morning. What our incoming European visitors think of this dreary wasteland of car parks, warehouses, and unlovely road engineering and snarling traffic I hate to think! Later in the weekend we were able to see how railway stations are done properly, in relation to the towns or cities they serve, at both Arras and Lille!

The London train I've never risked trusting to get me to Ashford on time turned up on time, again! Shall I risk it next year, and avoid the time and expense of a bed and breakfast at Ashford? Probably not!

It was good to have our old friend Dave as driver again, ever cheerful, and a very skilful navigator around all sorts of impossibly tight corners!. Even better, he did some of the underground visits with us as well. He feels our trips, penetrating the depths of the French countryside, are a nice contrast to the main roads and hypermarket runs he does so much

Chalk and Cheese



Montreuil-sur-Mer - German Barracks Photo from Paul Armitage

Montreuil-sur-Mer: World War II underground German barracks - Saturday 28th May 2005

Skirting Boulogne and Le Touquet we were soon at Montreuil-sur-Mer, although the sea, if it ever actually reached the town, has long since gone away. The medieval port was probably in fact on the formerly tidal but now long-since silted-up estuary of the Canche. Montreuil (a walled town on a chalk hill) is, unlike so many towns in northern France, largely unspoiled, having suffered relatively little damage in both World Wars, and (thus) little post-war reconstruction. Sadly, we had only tantalising glimpses from the coach of the timbered and stone antique buildings, although it has to be said that modern traffic in general, and large coaches in particular, do nothing to enhance such gems!

We had, however, come to visit the gloomy German barracks tunnels burrowed under the western ramparts of this town, a fortified place since around 900 AD. In the dry moat below the stone and brick ramparts high above, we found our French hosts waiting at the only remaining point of access, of the four made or planned. These were to have served two rectangular tunnel systems, linked by a connecting tunnel, within the lower slopes of the ramparts. The northern system was completed, and remains accessible. The southern system was not finished in time, from the German point of view, and the incompletely lined and unsupported chalk tunnels (and the link tunnel) have now collapsed. We gained access to the northern system by the surviving northern door, and found the floor area underground some two metres lower than the floor of the dry moat. This, it was explained, was the result of the Town Council having used the moat as a small landfill site at some time, although it is now pleasantly grassed over.

The northern entry tunnel runs into the hillside for about 40 metres, the short entrance section being guarded by a chicane skirting a small room with a loophole allowing any unwelcome visitors to be seen and, if necessary, shot. Former washrooms are passed on the left, and the outer of the two north-south passages on the right. This first tunnel, like all the others, is lined with concrete bearing shattering marks, and is of the order of two and a half to three

of. The trundling through the Channel Tunnel in the tin box (Shuttle) was as tedious as it inevitably has to be (how do you 'enjoy' being shut in a tin box for 35 minutes?) but soon forgotten as we emerged into the gloriously sunlit landscape of the Boulonnaise, the 'French bit' of our Weald, with the significant difference that their bit exposes much more Jurassic rock in its core (source of Marquise stone, some of which was used for Medieval building in Canterbury) and even some Carboniferous Limestone (worked from large opencasts.)

Linda and Martin distributed a quiz on 'chalk and cheese', as both materials were to feature prominently in the weekend. Your chairman noted a sudden interest in the technicalities of chalk and flint formation, perhaps not unrelated to one or two of the questions!

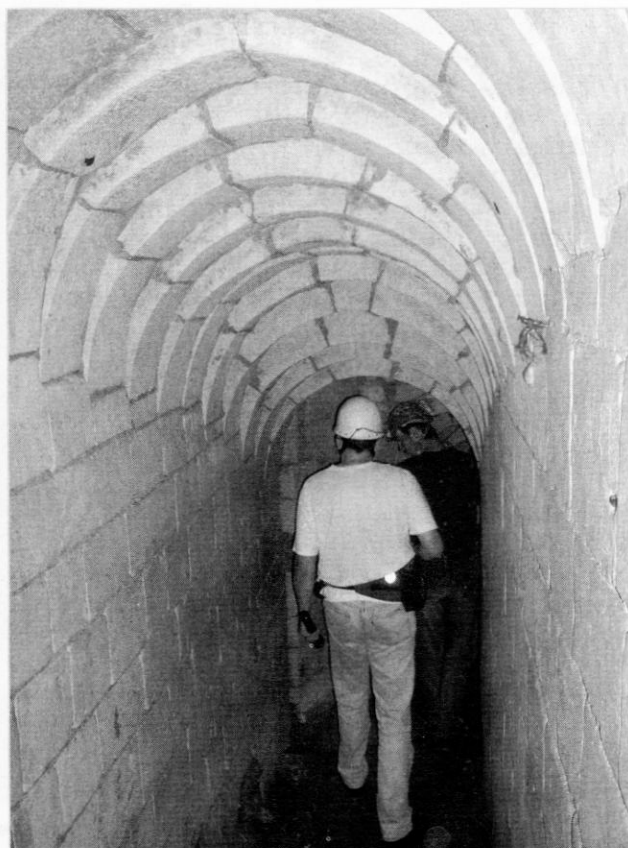
Chalk and Cheese

metres high. The tunnel continues, with signs of former fold-down beds, to the north-eastern corner, where sufficient survives (a sink and signs of shelves and a serving hatch) to indicate that this was the kitchen area. Not much survives in the way of fittings other than extensive runs of circular-section steel ducting, of various diameters, representing what remains of the ventilation system. The inner of the two north-south main tunnels (as also the outer seen on our completion of the circuit) had numbers of small rooms built of half-brick thick walls. These appear to have been exclusively for accommodating personnel, and perhaps storage of small goods (anything bulky or heavy or hazardous would have been awkward to take in or out through narrow passages, doorways, and right-angled bends. Some of the rooms appear, from marks left on the walls, to have been equipped with hot-water radiators and a few with individual wash-basins.

The large room at the south-eastern corner was rather devoid of signs to identify its function, but may have been some sort of meeting room or large office. The visit continued back towards the second (blocked) access along the southern east-west passage, which contains more of interest than the other three tunnels forming the rectangular system. Here (not shown on the plan), about half way along, were signs of plant, including a water pump (presumably operating from a borehole), cisterns, and engine bases for heating and ventilating plant. At the south-western corner the ways to the southern access and the tunnel to the collapsed southern system could be seen to be at least partially blocked by earth run-in through a failed section of ceiling. Our guide indicated the blockages to be complete beyond this point. We returned to our starting point passing further small brick-built rooms. The main system of four passages forms a rectangle about 30 x 55 metres, with the east-west tunnels about 1.5 metres wide, and the other two four or five metres wide.

The southern system was to have been somewhat larger, about 45 x 55 metres, with three rather than two north-south main accommodation tunnels, and plant rooms on the northern rather than the southern east-west passage. The north-south connecting tunnel (about 55 metres) seems also, from the plan, to have been intended to have rooms, or possibly tanks, along its eastern side. The earth bank or glacis opposite the tunnel systems entrance was once the location of a German gun, manned presumably by some of those who lived in the underground barracks.

The glacis furnished a very nice spot for the enjoyment of our picnic lunches, as outside the fortifications the countryside comes right up to the city walls. A few enterprising souls found steep



Montreuil-sur-Mer - German Barracks Photo from Paul Armitage

footpath up into the town to sample the local pubs.

There is a good deal more to see at Montreuil, above and below ground, and a return visit seems an excellent idea. It would also, with a longer stay, perhaps a lunch break, allow those who like to send postcards to their friends and relations, the opportunity to buy some cards and stamps, and appreciate the old-world town centre.

The ramparts themselves contain loop-holed galleries and casemates, off limits in the winter for the benefit of hibernating bats, but with luck visitable in the summer. And General Douglas Haig [1861 - 1928] established his World War I General Headquarters here in 1916, well behind the front lines. A book entitled *G.H.Q. (Montreuil-sur-Mer)* by "G.S.O." published by Philip Allan & Co. in 1920 notes (on page 25) that:

.. in the summer of 1918 G.H.Q. was bombed pretty regularly by the enemy. Those who lived there had unhappy proof of that. There were several deaths from bombs in and near the town. After the first bombing attacks orders were issued that no soldier, except sentries and officers on night duty, were to be allowed to sleep in Montreuil. The whole garrison was to go into the woods at night, or to take refuge in the

Chalk and Cheese

deep dug-outs which were tunnelled under the city.

It is not clear if this countenanced men sleeping on sentry duty! The description of the English shelters continues on page 27 as follows:

.. researches disclosed some very interesting old galleries or quarries under the citadel. Passages were cut through to these from points in the ramparts, and I believe that even the good citizens of Montreuil did not disdain to take advantage of the English "dug-outs" when the German bombs began to fall.

Filescamps farm - Saturday 28th May 2005

Filescamps is a large farm buildings complex about three kilometres west of Habarcq on the D339 road, about 14 kilometres west of Arras, on a minor road leading to Le Hameau. The stone and brick buildings, along with some modern barns, form a large irregular rectangle enclosing a three-storey dovecote (dated 1672), two large and very attractive willow trees, a large pond (now waterless) and two friendly cats. The stone buildings are of chalk-block ashlar, with a fine-grained sandstone ashlar used on the lower parts of the walls, and corners vulnerable to abrasion from passing traffic. This sandstone appears to be a French version of our English 'sarsen' stones, as in the larger stones at Stonehenge. The English sarsen stones have been described as irregular masses of hard sandstone occurring in the Tertiary beds overlying the chalk, found as residual masses when the surrounding softer sands have been eroded away. The natural stones have a very characteristic lobate surface, noted on faces of one or two cut stones in the dovecote. Stone (hard chalk) for the buildings, I gathered from one of our guides, came from a quarry (presumably subterranean) some 200 metres beyond the farm. On the west wall of the courtyard can be found the inscription:

F. MITCHELL
37566 RFC
64 Sq.
Nov. 7 1917

The farm hosted an important British aerodrome (known as Hameau) in World War I, north-west of the buildings. The British and allies passed this way again during the liberation of France in 1945.

The complex has a 'muche' or dug hiding-place, entered from the ground floor of the 1672 dovecote, and heading southwards and south-eastwards below the southern range of barns. Steps descend steeply, with seven changes of direction within the 12 metres depth. There are recesses each side at the changes

of direction, which appear to have accommodated posts to hold defensive wooden doors. This stone-lined inclined entrance-way is built to a most impressively high standard, with very carefully cut and shaped chalk blocks forming side-walls and a stepped vaulted ceiling (*escalier a redans*.) Sandstone (the same presumed sarsen stone as already noted) has been used at corners. Many of the chalk blocks here contain small flint nodules, as often seen in the abbeys in the lower Seine valley. Often the nodule has been left standing proud of the worked face, but on a few occasions it has been cut flush with the chalk, as seen in the very fine interior work in the Cathedral at Rouen. There is an amazing gallery of graffiti, names and dates and sometimes other details, of 19th century, World War I and World War II vintage, including a few German names from 1945, presumed to be those of prisoners of war.

One of the inscribed stones, recorded by Martin Dixon, is lettered as follows:



BLYTH, ENGLAND

Sergt. R.N. THOMPSON
64 SQUADRON
ROYAL AIR FORCE
OCT. 22
B.E.E. 1918. VIVE LE FRANCE

It can be seen, through gaps in the masonry, that the staircase descends through a sandy variant of 'argile-et-silex,' a French equivalent of the southern English 'clay-with-flints' which overlies the chalk. The impressive depth here evidently resulted from the need to go deep enough to find chalk sound enough to stand as stable, unsupported tunnels. The first attempt to tunnel a side-chamber, on the left, revealed chalk seriously deteriorated by several vertical solution-pipes filled with sandy 'argile-et-silex,' of from 20 to 50 centimetres diameter. Several side-chambers have been completed further on,

Chalk and Cheese

although ultimately progress is blocked by washed-in clay. Whether the complex was completed as planned, or abandoned, is not clear. Water and mud ingress has clearly been a problem (this is possibly where the water and clay puddling of the now dry farmyard pond went.) If there is indeed a successful underground quarry just north of the farm, that was clearly located in a more favourable spot. None of the *in-situ* chalk in the *muche* is in pieces large and sound enough for worthwhile ashlar.



Habarcq subterranean quarry - Photo from Paul Armitage

Frederick Willmann and colleagues are attempting to excavate the full extent of this *muche*, and have done much work on the archaeology and history of these structures throughout the region. This example is unusual in not being below a church, or indeed within a village, and exhibiting decidedly superior workmanship (albeit not at a happy choice of location in view of the difficult subsoil at the spot chosen!) *Muches* are thought to have been made in the 16th and 17th centuries during the Franco-Spanish wars. At this time, Spain occupied the Low Countries to the north, and the known *muches* appear to occur within the area of the battle lines of the opposing sides. It is thought that the local inhabitants dug the *muches* as places to take shelter and hide their belongings and livestock from roaming looting soldiers and mercenaries. However, many *muches*, as at Filescamps, are surprisingly clean inside, so perhaps were never occupied for long or at all, as there is so little evidence of soot from whatever form of lighting may have been used. Or perhaps there was a 16th / 17th century version of the blackout, and the occupiers shivered in darkness, relying on each other and their livestock for warmth?

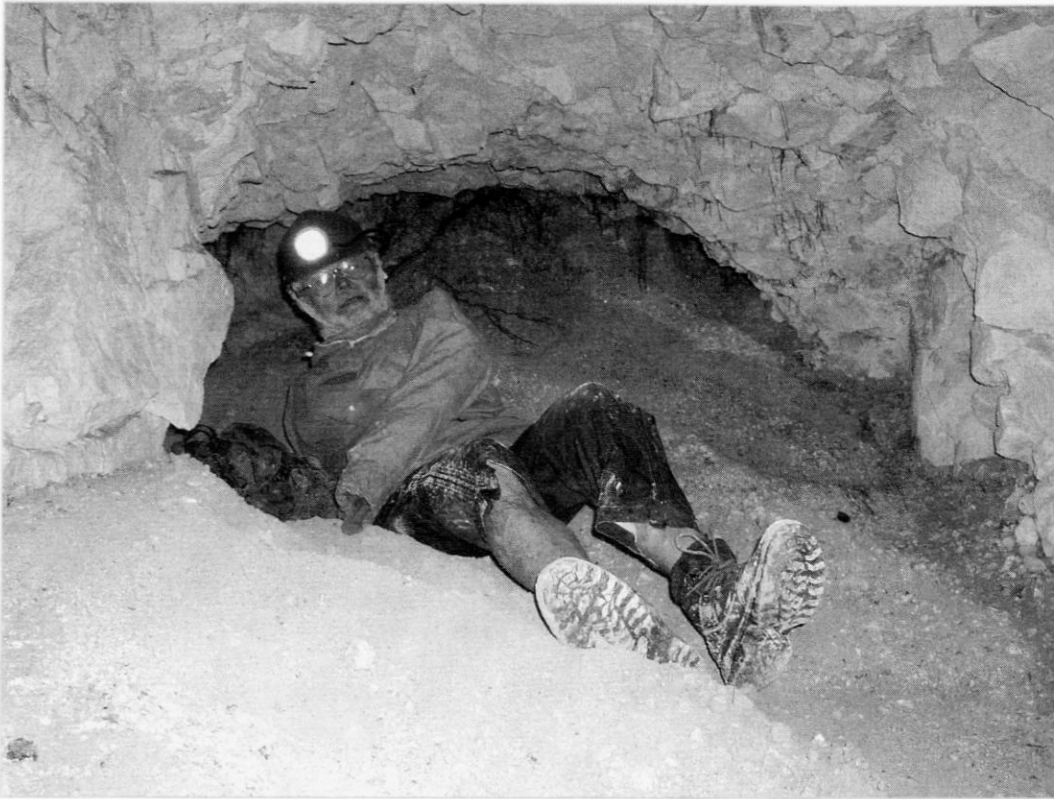
Frederick Willmann's website www.muches.fr.st (*Villages Souterrains du Nord de la France*) should

be visited for further details. We are fortunate in having had his assistance with locating and arranging access to this and other sites, and especially grateful to him and his colleagues for acting as guides over the weekend, and to the owner of the farm for permission to visit.

Habarcq subterranean quarry - Saturday 28th May 2005

Habarcq is a large village on the D339 road, about 7 kilometres north-east of Avesnes-le-Comte, and 11 kilometers west of Arras. There is a large but apparently derelict and abandoned church with an 18th and 19th century derelict chateau (in course of restoration) built up against its west end. The chateau is of chalk-block ashlar, with sandstone in the lower parts again as at Filescamps. Access to the underground workings is from the cellars of the chateau, passing below the party wall with the church. The chateau replaced an earlier one on a nearby site, dating back to the 13th / 14th century. Various parts of an evidently quite extensive system of underground workings appear to have functioned as a *muche* or hiding-place, a chalk mine (a Rue du Four in the village testifies to the former existence of a lime-kiln, or *four à chaux*) and a quarry for chalk building-stone. And various parts of the system have seen a range of secondary uses. The flight of steps

Chalk and Cheese



Poix-de-Picardie: Chalk mine Photo from Paul Armitage

down from the cellars, for example, passes several side chambers containing wine bins and a lot of empty bottles (I checked carefully.) A British World War I HQ was located at Habarcq, and included a brick pillar and steel beam strengthened structure within the underground workings. Profuse graffiti from World War I and later includes the names of Canadians, Americans, and British from, amongst other places, London (Regent's Park), Glasgow, Steyning (Sussex) and Thetford (Norfolk.) One from the 1890s was also noted. The chateau was occupied by the Germans in World War II, when one of their parked tanks, its engine running, fell into the unsuspected mine workings. Sabotage was at first suspected, until investigations revealed the extensive underground quarry. The tank was hauled out to firmer ground.

The quarry galleries show beds of sound stone 20 to 50 centimetres thick, with some flint nodule bands, and no solution features, altogether much more suitable than seen in the *mucho* at Filescamps. Fragments of the fossil oyster *Inoceramus* were noted, but no fossils specifically diagnostic of any particular chalk zone or horizon. Much small chalk (useless for building or limekiln feedstock) has been left underground as quarry spoil, in places behind roughly built dry-stone retaining walls. Some prominent joint planes were noted, but appeared not to be related to the direction or method of working.

The bottom of a winding-shaft or *puit de extraction* was seen, and the remains of an air-raid shelter access in which timber steps had rotted away.

The day was concluded with dinner at a restaurant on one of the Arras town squares and, for some, an exploration of some of the local pubs.

**Poix-de-Picardie:
Chalk mine
and German
World War II
bunker:
Sunday 29th
May 2005.**

Poix-de-Picardie is a small town south-west of Amiens with a railway station on the electrified railway from Amiens to Rouen, which crosses the valley of the Poix here on a viaduct. It stands where the D901 crosses the N29. The site visited, in the private land attached to a large house built in 1929, lies between the D901 and the railway to the north-west of the town. The system, is on three inter-communicating levels (two of which partially overlap.) It is believed to have been started, from a drift entrance on the far side of the road, in the Middle Ages, and is said once to have had 17 entrances. Why three levels were worked is not clear, although it was stated that the top level, in places only two metres below ground level, is thought to have been mined for chalk feedstock for lime-kilns known to have been operated nearby. Possibly the second and third levels, at depths of 14 metres and 18 metres relative to the same datum point, allowed extraction of larger and sounder blocks suitable for ashlar masonry.

The British Expeditionary Force reached Poix before the retreat to Dunkerque in May / June 1940. The British airfield, north-west of the town, was taken over by the Germans, and a Kommandantur (command post) established in the house. The Middle level of

Chalk and Cheese

the underground workings was modified by them for use as a bunker and for storage, with three narrow concrete-lined vertical shafts sunk for ventilation and emergency escape purposes. One of these is at the back of one of the two occupation-period sheds surviving on the site, and the other two are below blockhouses further up the wooded slopes. Access is currently (May 2005) possible via a low, sloping



Poix-de-Picardie: Chalk mine Photo from Paul Armitage

scramble at a former drift entrance site leading into the top level, or via the more distant of the emergency escape shafts below a small blockhouse in the woods. This descends 14 metres to the middle level, and has the original step irons remaining in place and safe enough to use. There is much disturbed ground in the surrounding woodland, which may represent dumps of shaft spoil, or bomb craters, perhaps.

Level 2 has a very lumpy ceiling with numerous prominent flint nodules, and a floor-ceiling height of two to two-and-a-half metres. The pillar and stall layout is directly related to a very strong principal joint set, and to a lesser degree to a secondary but weaker set approximately at right angles to it. Although the quarrymen have saved themselves a considerable amount of work by following joint planes to form pillar sides, most of the unsupported ends of the cantilevered chalk roof slabs have remained in place. Most of the joint planes observed are free of staining, thus clearly tight and not conducting water which would compromise ceiling stability. One open joint, only, was noticed, with a sand fill, and no solution pipes. As at the Emmer Green (Reading) chalk mine in England, the very flat joint planes have been extensively used for written graffiti, in this case German. In the immediate area of the entrance shaft there are signs of what appear to have been timber supports, let into the chalk pillars, assumed to have

supported storage shelving (although the supposed support levels seemed somewhat out of alignment in some cases.)

Beyond the supposed storage area, brick walls have been erected to section off a series of rooms said to have formed a small underground hospital. Some iron doors remain, and a plant room can be identified, and a ventilation shaft (with no ladder.)

The owner of the property and adjoining house very kindly allowed us in to see some 1940s and later plans and other relevant documentation for the site, before we departed for a most enjoyable lunch in the town.

La Herlière: La Herlière (Lion) quarry: Sunday 29th May 2005.

La Herlière is a village on the south side of the Doullens - Arras road (D 925 - N 25) about 18 kilometers south-west of the latter place. We were allowed access here by the Mayor, on the chairman signing a disclaimer on behalf of Subterranea Britannica and members present. This is a two-level system, with the two levels superimposed, separated by about 3.5 to 4 metres of intervening chalk, and connected by an internal vertical shaft. The entrance is inside a small shed near the village church, and

Chalk and Cheese



La Herlière (Lion) quarry photo from paul Armitage

leads by a steep, curving set of steps which communicates with both levels. On the right-hand side, close to the bottom of the steps, is an unfinished bas relief carving of a lion in profile, signed and dated 1916. The upper, less extensive, level is thought to be older. The lower level was used by British and / or Empire troops during World War I. The thick-bedded flinty chalk looks suitable for building purposes. The approximately rectilinear pillar-and-stall or pillar-and-room layout is set out roughly east-west and north-south, and aligned to conform with the principal north-south joint set which, as at Poix, has been followed without untoward results in forming pillar sides. Floor to ceiling heights vary from about two to three or more metres.

A characteristic feature of this working is the spoil disposal method, the surplus worthless small stuff having been spread out fairly evenly throughout much of the quarry, thus raising the floor level by a metre or slightly more.. This might of course have been the work of the wartime occupants, to make the place more convenient for their purposes. However, this levelling being a possibly primary feature of the quarry working methods here is suggested by the circumstance that the entire floor has not been reduced to one constant level throughout. At working faces in blind bays, and perhaps in the last part of the quarry to be worked, the original floor level is still visible. If the quarrymen went to the trouble of creating the levelled-up floor areas, this would

suggest that they had some secondary use (perhaps mushroom culture or storage or shelter) in prospect for the space, traces of which may have been obliterated by wartime occupation.

How the layout of the levelled and raised floor sectors relate to the shaft (where the stone was presumably lifted to surface) was not determined in the time available, but is deserving of recording. Presumably the staircase access

linking the two levels was dug for the convenience of the wartime occupants.

The day concluded with a splendid dinner at one of the several restaurants on one of the two very large town squares in Arras.

Lille: the Lezennes quarries - Monday 30th May 2005

Lezennes is a suburb of Lille, although possessed of its own Mayor (who kindly gave permission for the visit, and supplied refreshments (wine and biscuits afterwards.)) The small part of the very extensive quarries network we were allowed to visit was gained via what looked like a normal access to cellars below the staircase in a town-centre house but in reality proved to be brick steps down to the quarry. This small section is provided with electric lighting, and is evidently retained to allow limited access for occasional groups such as ours. We were given a printed handout with some geological and historical details. As the 'display' part of the quarry has clearly been 'tidied up' with visits in mind, it may give a misleading impression to the archaeological inquirer, who would prefer an undisturbed area as left by the quarrymen! The noticeable, but questionably significant, feature here is the fact that a large volume of relatively large, fairly evenly sized, irregularly-shaped quarry spoil in banked up on one side of the short length of preserved and lit passage.

Chalk and Cheese

The part of the quarry seen leads back under the street, and was said by our guide to extend to a total length of over a hundred kilometres. The floor-ceiling height is about 2.5 metres, but we were informed we were standing on a depth of about three metres of levelled spoil covering the original floor level. Secondary uses cited (doubtless the reason for the spoil-levelling) included chicory and mushroom culture, and storage cellars for various houses. The *in situ* rock seen comprised well-bedded chalk, with beds up to a metre or more thick. There are also some thin lenses of useless small broken stone.

There are numerous vertical extraction shafts, of which we were able to see an example (capped at the top with stone blocks) of from three to five metres diameter. In this shaft it was possible to see four parallel joints, and a few others were noted on the same alignment elsewhere. This alignment was approximately at right-angles to the passage we were in, conducing to the ceiling stability at this point.

It was stated that access was still possible at various points from a number of private properties, although so far as the local administration was concerned the entire network is officially closed on safety grounds. There had been problems of children entering and getting lost, one pair having been found only after two days of searching.

There had, it was said, been no subsidence problems in the district, although the accidental reopening of winding shafts had occasionally been a nuisance. No engineering survey of the quarry appears to have been made, although I assume that plans are kept and periodic monitoring inspections made.

The stone extracted was employed both in Lezennes, and in major buildings in the city itself, including the citadel by Sebastien le Prestre de Vauban [1633 - 1707.] Much smaller quantities were taken out to be burnt to lime in kilns and employed for soil improvement by local farmers.

We enjoyed a very jolly lunch at a brasserie close to the city-centre station (which, unlike Ashford, has an imposing façade, ornamental fountains, and no 'ring-road' separating it from the nearby Grande Place.)

[Some information about the quarries in Lezennes may be found in: Georges WINDAL, 1991, *Sauvegarde et mise en valeur des carrières souterraines de Lezennes (Nord.)* Projet de la Maison Régionale de la Pierre et des Carrières. IN: Jacques CHABERT, *Carrières souterraines. Actes du II^e Symposium International sur les Carrières Souterraines, Paris-Meudon 8 - 13 juillet 1989*, 137 - 142 [Conservation and development of the Lezennes underground quarries, Nord, France.]]

Lille: the Villeneuve - d'Asque - Lille (VAL) Metro - Monday 30th May 2005

Lille, the 'Manchester of France', has, like the British city, modernised itself and made itself a tourist destination in its own right, being especially popular for day trips by Eurostar from London Waterloo. The heart of the city is a place of fine buildings, a Grand Place, good shopping, numerous pavement cafes, museums, and art galleries. There is also a Vauban citadel.

The Metro at Lille has two lines, which have interchange stations (both underground) at Gare Lille Flandres (the 'domestic' main line terminal in the heart of the city) and at Porte de Postes, to the south-west. There is also a station, on Line 2, at Gare Lille Europe, the brand new station for through Eurostar trains between London and Brussels or Paris, and also long-distance TGV and similar trains to and from, for example, Köln and Amsterdam. The VAL (initially standing for Villeneuve - d'Asque - Lille but now deemed to mean *Vehicule Automatique Leger*) is the largest wholly automatic railway in the world.

Line 1 (between termini at C.H.R.B. Calmette and 4 Cantons) is in tunnel for the section served by stations from Post de Postes to Villeneuve d'Ascq and a short stretch of tunnel including the underground station at Triola. Line 2 (St. Philibert to C.H. Dron) has stations in tunnel from Bourg to Port de Postes, and Lille Grand Palais to Fort de Mons. There is a short elevated section on Line 2 between Porte de Arras and Porte de Valenciennes. There is a single point at which the lines are linked, allowing running stock to be transferred from one line to the other.

Tunnelling for the underground sections was through deeply shattered chalk and used ground-freezing and injection consolidation to facilitate operation of the tunnel-boring machines. The first part of Line 1 was opened for service in May 1983, and subsequent extensions and the opening of Line two have resulted (from 2000) in 62 stations and 45 km of route (of which 14 km are in tunnel.)

The system is entirely automatic, on 450 volts DC, and is operated from an impressive control centre, which we were able to see at work, underneath the large open space and fountains at the front of Gare Lille Flandres. After an excellent introductory talk on the system and a good question-and-answer session, we took a series of trains (which arrive as frequently as every minute!) to see the impressive architecture of several of the main stations on both lines, rejoining our coach at Gare Lille Europe.

Chalk and Cheese



Bois des Huit Rues V1 Site launch ramp - Photo by Dan McKenzie

Nobody got lost! The two-coach trains resemble our own Docklands Light Railway's vehicles, and the stations feature platform-edge automatic sliding doors as on London's Jubilee Line Extension or the Line 14 stations in Paris. Platform doors and train control are interlocked, so that forcing the platform doors open stops the trains. 143 trains operate the service for 19 hours each day.

Members observing the landscape in which Lille is set, and studying the maps of the city distributed to us, will appreciate why the unjustly-derided Maginot Line was not continued to the Channel coast.

The Maginot line was designed to be built into a series of hills, such features being conspicuously absent from much of the Franco-Belgian border. And it called for a width of fortified (and evacuated) land along the inside of the frontier some four to six miles deep. The Lille conurbation extends north-eastwards as a continuously built-up area to include Roubaix and Tourcoing and across the border into Mouscron in Belgium. Taking the Maginot line along this part of the border would have meant evacuating and demolishing most of the two major towns of Roubaix and Tourcoing. A comparable task to creating a swathe of no-man's-land between London and Croydon!

Bois des Huit Rues V1 site - Monday 30th May 2005

The final visit was to an exceptionally complete and well-preserved V1 launching site near Wallon Cappel, just south of the N42 road about five kilometres west of Hazebrouck. The now wooded site (in the Fôret Domaniale de Nieppe) features a self-guided trail, with informative multi-lingual boards explaining the functions of each of the buildings and structures,

linked by the original wartime concrete roads. Although the woodland features numerous bomb craters, including some very close to buildings, there was relatively little evidence of structural damage.

Access to some of the buildings is now prevented by steel grills, as bat boxes have been installed in them, but those who wish can still enter at least one of the three ski-shaped storage buildings. The protective blast walls at the far end of the site flanked the now dismantled steel launch ramp which pointed directly at London (201 kilometers away) on a bearing of 297°, and an elevation of 6°. Having examined this, it was time for us to head back towards the intended target!

And so back to Ashford

Thence home via a satisfyingly brief transit through the Sangatte Shuttle terminal. The coach was not searched this year, and an immigration control officer was satisfied by walking along the coach to look at us and our passports. Those wishing to go shopping managed to do so inside fifteen or twenty minutes.

This report is based on the exceptionally helpful information contained in the dossier assembled for each participant by Linda Bartlett and Martin Dixon, who as usual made a first-rate job of researching the whole excursion down to the last detail, and on supplementary sources and notes made at each site. Subterranea Britannica is fortunate indeed to have Linda and Martin as such active and hard-working members.

Paul W. SOWAN

Gibraltar 'Stay Behind' Cave

For years, a rumour persisted in Gibraltar of a top secret hideout that had been excavated in the Rock by the Military during WW2. Were the Germans ever to have captured Gibraltar, it was said that six men would have sealed themselves in the hideout from where they would have secretly monitored the movements of the Germans and reported these back to London. There was no official backup to this story and no documentary evidence was ever found to support it, so there was no official name for the project and it began to be referred to locally as 'Stay-Behind Cave'.

Despite a search of the network of tunnels that honeycomb the Rock of Gibraltar in the hope of locating the secret hideout it could never be found. In late 1997, the Gibraltar Caving Group noticed a strong gust of wind in a tunnel; further meticulous searching led them to a system of chambers, which they soon recognised as being the lost 'Stay-Behind Cave'.

The hideout, which had never been used, had remained sealed for over fifty years. It was well preserved and included dormitory facilities, east and west-facing observation posts, and a fresh-water cistern. The tank was still full of water with a working tap above an open drain which emptied into a crevice in the rock. There are two toilet cubicles, each fitted with a flushing Elsan pan. The east-facing opening led on to a narrow platform on the cliff face, which is totally hidden from view. The west-facing opening, was much smaller affording only enough room for one observer to look through at a time and was concealed from the outside by means of a concrete wedge that was placed in the opening when not in use. The wedge was still in place when the hideout was discovered.



The main living quarters photo by Nick Catford

In September 1998, Mr. Dennis Woods who had been involved in the construction of this facility (known in his day as Braithwaite's Cave on account of the Commanding Officer's name - Major J A Braithwaite) returned to Gibraltar for the first time in over fifty years and was invited by the Gibraltar Museum to see the site.

Having Mr. Woods was the perfect opportunity to obtain information on the construction techniques employed and he was obviously able to confirm the authenticity of this unique site. He explained that when they were working there, the workforce were transported to and from barracks through the tunnels, and therefore he could not recall the exact area where the complex was located, but he recognised the interior the minute he saw it. He also explained how the entire team that had been working on the site was shipped back to the United Kingdom on completion of the works and they were not posted overseas for the duration of the war in order to protect the secrecy of the operation.

Mr. Woods walked through the various rooms revealing further information. At the base of the stairs leading to the observation posts a bicycle was still in place. This had been modified, with the chain having been removed, and replaced with a leather thong, according to Mr. Woods, "to reduce the noise made

Gibraltar 'Stay Behind' Cave



The 'bicycle' used to drive the ventilation system and generate power photo by Nick Catford



by the contraction when in use." This was to have been used to drive a ventilation system and to generate electricity to power the radio equipment.

There was no radio equipment on the site, but the remains of the copper aerial were still there. This aerial was designed to be suspended from the platform on the eastern side of the complex and it was to be further concealed after use by retracting it into a pipe that run down along the stairs leading back down to the living quarters.

The largest room, where the water from the cistern was accessed, and where it is presumed that the men

The tap , found still to be working, by Sub Brit members on their recent visit to Gibraltar , The water tank can be seen through the hole in the wall photo by Nick Catford

Gibraltar 'Stay Behind' Cave



The flushing toilet photo by Nick Catford

would have lived was tiled to absorb the sound that they would have made when moving about the area; much of the cork tiling is still in place. Mr. Woods had been responsible for the plastering of this room, and he confirmed that the entire room, including the ceiling had been plastered in order to provide further sound insulation.

The entrance corridor still had the stores of bricks that the men would have been used to brick the

access up further, once they had been sealed in and close to the entrance the corridor had a loose soil floor where provision had been made for burials, if any of the personnel died during their voluntary entombment!

Article provided by Gibraltar Museum

RAF Daws Hill

THE UNITED STATES UNDERGROUND COMMAND HEADQUARTERS AT DAWS HILL



Brigadier General Frank L. Anderson escorting the US Secretary of War on an inspection tour of the Command Headquarters in July 1943

Wycombe Abbey Girls School on the southern side of High Wycombe opened on 23rd September 1896. The school had purchased 30 acres of land from the Noakes Manor Estate, the family home of the Carrington family; this included Wycombe Abbey, a neo-Gothic style house. Lord Carrington retained the family home, Daws Hill House within the 400 acre estate.

In 1928, 200 acres of the estate, including Daws Hill House was offered for sale as building land. To avoid being surrounded by housing the school purchased the land and house allowing them to expand their facilities; the house provided extra dormitory accommodation for pupils.

In 1942 the Royal Air Force were searching for a suitable expansion to their Bomber Command Headquarters at Walters Ash to the north of the town. A new headquarters was urgently required prior to the arrival of heavy bomber units of the US Army later that year. Despite vigorous opposition from the school, the Air Ministry requisitioned the entire site on 28th March 1942. The school was closed for the duration of the war and the girls were dispersed to other schools.

Within two weeks the first contingent of American officers arrived at Daws Hill to establish an Eighth Air Force headquarters to be known as Station 101, for VIII Bomber Command. The school was converted into an administration block and numerous other buildings were erected in the grounds.

On the top of the hill a new three level protected underground headquarters was built in eleven months at a cost of £200,000. Initially the new bunker was shared by RAF Bomber Command until the American were ready for full occupation under the codename 'Pinetree'

The bunker had a floor area of 23,000 sq ft with a 10' thick reinforced concrete roof and above it 25 feet of soil. The side walls were over 5ft thick and to absorb the shock wave from an explosion the building was surrounded by a void and then a further six feet of reinforced concrete; in effect it was a bunker within a bunker. The bunker was provided with the usual air conditioning and gas filtration and was protected with gas tight doors that allowed the bunker to be maintained at an overpressure with an internal temperature of 67F. The bunker was totally self sufficient with its own water supply and a standby generator.

The hub of the headquarters was the communications centre with direct links to the 8th Airforce Fighter Squadron and Bomber Group Operations HQ, the 9th Airforce HQ, RAF Group Operations Rooms and the Bomber and Fighter Command HQ.

Lynn Camp was established beyond Daws Hill consisting of a large number of Nissen huts and tents and the usual array of buildings associated with a military camp including motor pools, cinema, mess halls, kitchens and a Red Cross club all fed by a new network of roads.

Towards the end of the war in January 1945, there was considerable pressure to hand the site back to the School Governors at the earliest opportunity and the school was already preparing for the autumn intake of pupils. The Air Ministry were reluctant to vacate the site but after questions were asked in Parliament they agreed that, "the school buildings will be released as soon as the Allied unit now occupying them has been moved" but this would not be until at least 1946.

Most of the Americans were gone by October 1945 but the Air Ministry remained on site to administer the handover. A protected area was retained and was described as an 'Underground Telephone Exchange'.

RAF Daws Hill

Although the school had returned to Daws Hill by the summer of 1946, Daws Hill Camp was still occupied by the Air Ministry, although within the school grounds. Many of the huts were being used by homeless people who were evacuated from London during the blitz. Before the start of the September term a fence was built segregating the camp from the school grounds. Eventually the town council provided new housing in the town and the camp was

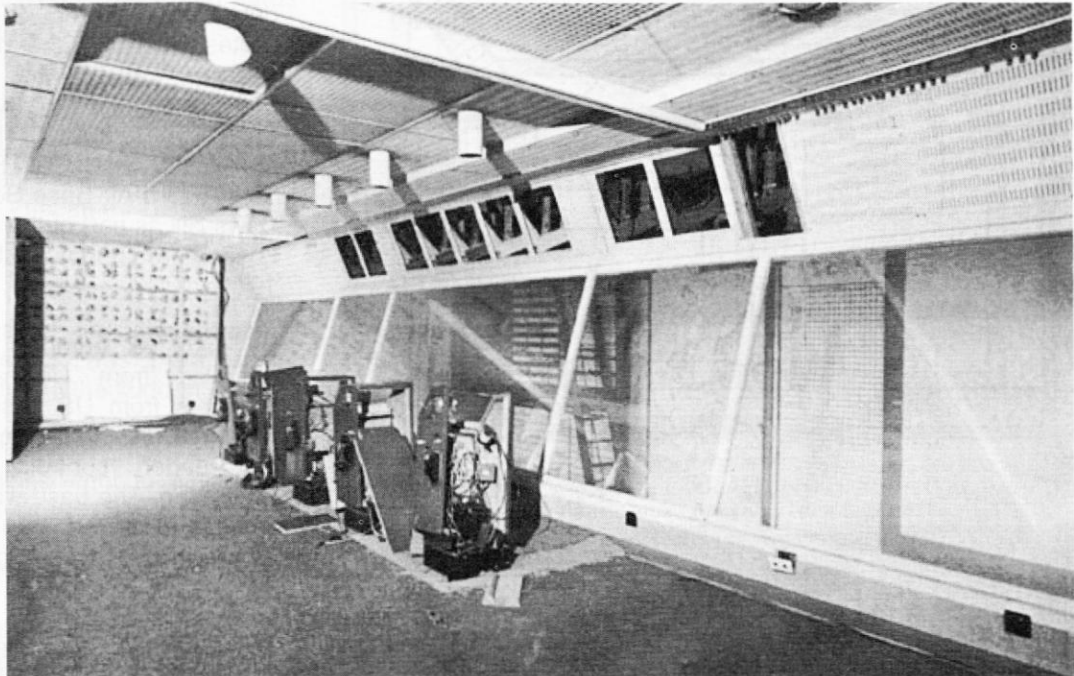
vacated. The school governors were still however in dispute with the Air Ministry about the level of compensation, including the cost of removing the war time roads and this wasn't settled until May 1949.

In 1950 it became evident that the US Airforce would need to utilise sites in the UK with the threat of attack from the Soviet Union. The Air Ministry still wanted to retain the bunker but the school refused to sell the land and in December 1950 the school signed a 21 year lease prompted by a request from the US Strategic Air Command (SAC) to reoccupy the wartime command centre for its UK-based 7th Air Division; this was established on the site in May 1952 as the 3929th Air Base Squadron and on September 10th 'USAF Site, Wycombe Abbey', was officially opened as a satellite of the 3911th Air Base Group at RAF West Drayton.

The 7th Air Division was responsible for all UK bomber and fighter bases and a large number of stations were rebuilt with extended runways, nuclear stores and new staff accommodation. A number of reserve airfields were developed as well such as Stansted where minimal facilities provided such as extended runways.

In February 1954 a new lease was agreed with the school which included additional land to expand the camp at Daws Hill to accommodate the arrival of the 7th Air Division headquarters that moved to High Wycombe from their base at South Ruslip.

In June 1954 there was a further request from the Air Ministry, this time to purchase the site outright and a



The two level operations room. This was floored over during the 1980's refit. Photo by Robert Mead

sale price of £40,000 for the camp was finally agreed and contracts exchanged in August 1956. The sale did not include the bunker however which remained on lease for a further 56 years (28 years an £1 per annum and 28 years at £100 per annum) with the understanding that there would be no additional tunneling beyond the boundary of the site.

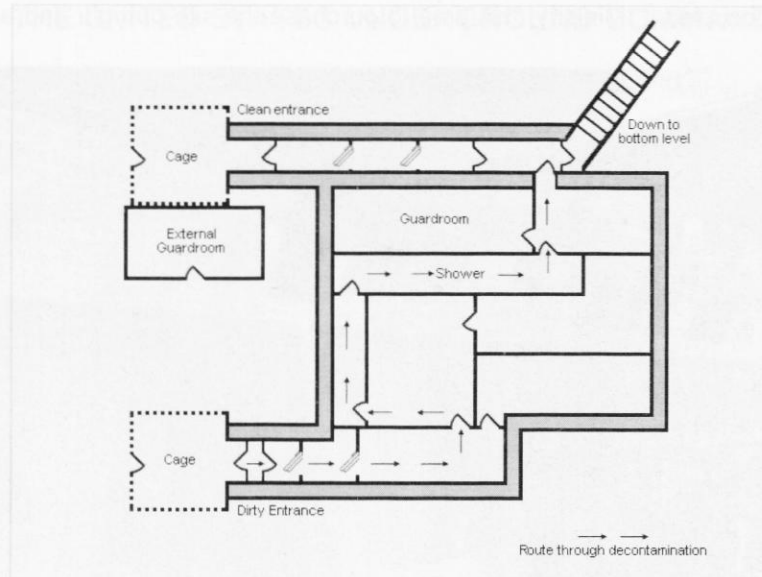
With the withdrawal of the 7th Air Division from four of its East Anglian bases by 1959 the US Strategic Air Command concentrated in Oxfordshire making High Wycombe the natural choice for their new central headquarters and this took place on 1st July 1959.

A new construction phase followed with the addition of over 70 new buildings with the station acting as the Strategic Air Command's UK during the build up to the Cuban missile crisis with the SAC and Bomber Command acting as one combined unit for all practical purposes.

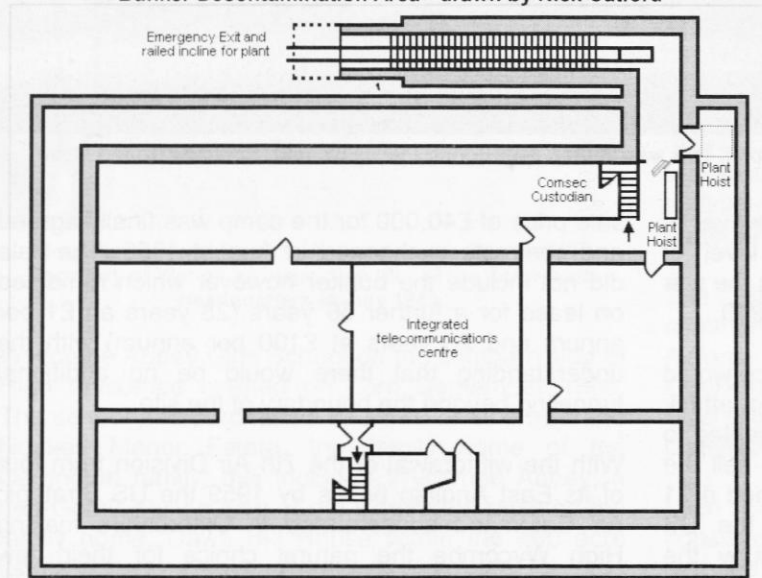
In the late 50's US B47 bomber squadrons spent a rotational period on deployment to the UK from their US bases under operation REFLEX ALERT. These aircraft were bombed up and ready to strike on a 24 hour basis with nuclear weapons.

In 1965 with the advent of jet bombers with mid-air refueling making the B-47 force redundant and Reflex Alert was stood down and US forces in the UK were

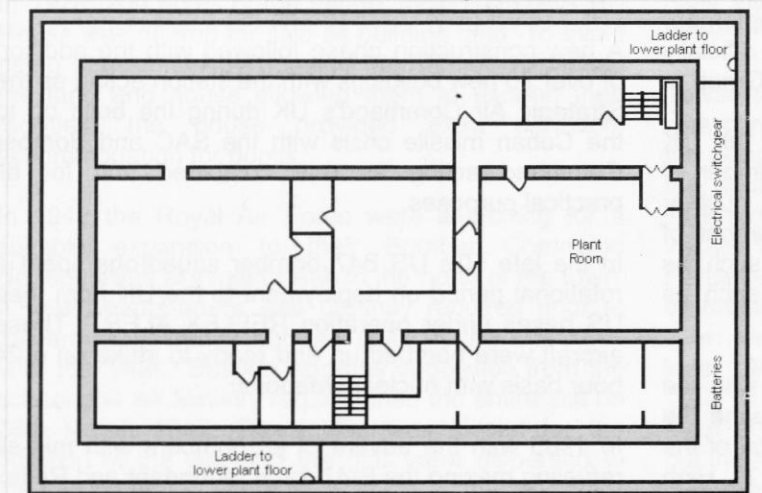
RAF Daws Hill



Bunker Decontamination Area - drawn by Nick Catford



Bunker Upper Area - drawn by Nick Catford



Bunker Middle Area - drawn by Nick Catford

drastically reduced. The US government was now able to provide a higher level of defence direct from bases in the United States and in June 1965 the 7th Air Division at High Wycombe was deactivated with the base being transferred to the US Third Air Force and the United States Air Forces in Europe. The 7563rd Air Base Squadron arrived at Daws Hill as part of the US defence of the London area remaining there until January 1971.

By 1969 all bomber forces had been removed from UK although in war Bombers from US bases would forward deploy to UK. Fighter squadrons remained but under control of UK Fighter Command. The base was reduced in size as many of the 800 personnel were withdrawn and following the departure of the 7563rd Air Base Squadron only a small caretaker group remained at the base. By this time the bunker was no longer in use and by 1976 it was stripped out and almost empty.

However, the big defence spending plans of the Reagan administration in the 1980's called for a USAF Wartime HQ for Europe. In April 1984, the base was occupied by the 7520th Air Base Squadron, under the control of the Third Air Force HQ at RAF Mildenhall.

Congressional Appropriations Committee documents in 1982 described the High Wycombe bunker as an 'underground building of approximately 20,500 square feet in excellent condition with no sign of moisture or deterioration'. Much of the cost of refurbishment was to strengthen the building, to help proof it against chemical or biological attack, nuclear radiation, and the electromagnetic pulse of a nuclear explosion. At least \$33 million is to be spent on electronic equipment. The contract to rebuild the bunker was awarded to Sir Alfred McAlpine with an expected cost of \$13 million.

Between 1986 and 1989 when it became fully operational the bunker was completely rebuilt but not extended in operational area. The main extension was for a new plant room and life support systems including air filtration. A decontamination area was added at the

RAF Daws Hill

main entrance which remained externally little altered from WW2 days and large concrete baffles were placed over the three ventilation shafts.

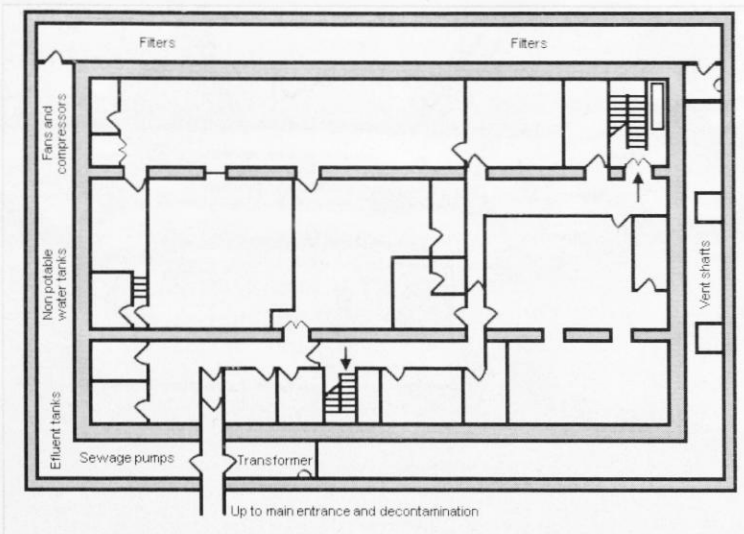
The two level gallery and operations room was floored over and rooms full of computer equipment replaced the manual plotters of WW2. The site became USAFE (US Airforce Europe) European Theatre War HQ.

A central programming facility for European based cruise missiles was planned but never completed due to the sudden phasing out of that system.

Communications links went to all airfields and operational HQ's in USAFE as well as to the US OFFUT bunker in Nebraska. The main communications hub of USAF in UK at Croughton (also an international Autodin [data transfer] centre) was directly linked as were the two Autovon hubs at Martlesham and RAF Uxbridge, the US Navy HQ London and Eastcote, Burtonwood stores site, the US SATCOM Terminal at RAF Oakhanger and Strike Command Tactical Control Centre at RAF High Wycombe. However the main link was to Permians in Germany the Autodin centre for the German Theatre Area. Communications were maintained by the UK Signal Squadron.

By 1992 there were 225 American military staff and 116 defence department employees working there when the base's strength was reduced again with the post cold war rundown in USAFE facilities. The base was finally deactivated in May 1993 and handed over to the Commander of US Navy Activities UK for use as a vehicle maintenance and warehouse facility. The US Navy had no use for the bunker which was mothballed and retained on care and maintenance. It's only use in recent years has been for an annual Halloween party for US Naval personnel and as a film set.

The housing on the base is now allocated to naval personnel. It is divided into two areas: Eaker Estate and Doolittle Village with a mixture of townhouses and bungalows with all the usual facilities contained within the confines of the base. These include a mini-mart, petrol stations, four tennis courts, two playgrounds, bank, bowling alley, fitness center, ball field,



Bunker Lower Area - drawn by Nick Catford



The 'dirty' entrance into the bunker - Photo by Nick Catford



The stairs up to the emergency exit from the upper floor. Note the rails on either side of the steps - Photo by Nick Catford

RAF Daws Hill



Upper floor - One of the many empty equipment rooms - Photo by Nick Catford

youth center and the London Central High School an American boarding school for servicemen's children which opened in 1972.

For many years the base was under used and following a strategic review of MOD sites in the London area it was announced in November 2002 that the US Navy was to move out of Daws Hill providing a satisfactory agreement could be reached between the US Navy and the MOD for relocating the naval personnel. It was suggested they could be accommodated at RAF Uxbridge which would become one of two proposed core sites for the US Naval operation in the Britain. This would release the land for housing development; Wycombe council needs to find space for 400 new homes before 2011.

However if the MOD sells Daws Hill, Wycombe Abbey School would be given first refusal but would have to pay the market rate for the land. The nuclear bunker would be transferred back to the school at no cost.

The bunker today

The bunker is located within a secure secluded compound through two sets of locked gates in a wooded hollow in Warren Wood on the crest of Daws Hill. Close to the main entrance is an area of hard standing with a number of buildings clustered around it including a large warehouse and some hutting; these have no obvious connection with the bunker.

The standby generator house is built into a bank alongside the entrance to the car park; it has two large pairs of double doors. The bunker itself is mounded with light tree growth on top with both the

main entrance and emergency exit opening onto the car park. The emergency exit also acts as the access point for installing and removing plant and other equipment in and out of the bunker. As well as a stairway down to the upper level there is an inclined railway straddling the stairs operated from below and from an external control cabinet adjacent to the top of the stairway. Both the emergency exit and the main entrance are surrounded by a steel cage for added security.

The main entrance consists of two blast protected doorways with a small external guardroom between them. One entrance is described as

'clean' and leads directly to the stairs down to the bottom level passing through a single steel door and two heavy steel and concrete blast doors forming an air lock. The second entrance is described as 'dirty', with a steel door and two blast doors giving access to the bunker through a decontamination suite. This comprises a number of small rooms for undressing, shower and dressing and includes a disposal chute for contaminated clothing.

At the top of the stairs there is a second internal guardroom at the top of the long stairway. The guardroom still retains its furniture, electrical controls and as with many of the rooms in the bunker UK 240V and American 120V power sockets alongside each other.

At the bottom of the stairs, the entrance tunnel passes through the void area between the inner and outer skin of the bunker and through a second air lock into the lower dog legged spine corridor. As built, the narrow void area was unused but during the 1980's rebuild it was utilised for the additional plant that was required for the upgrade forming a ring of plant around the bunker. This ring plant room is entered by doors on either side of the entrance passage and is 10 feet in width.

Going through the doorway on the left there are three steps down to floor level where the sewage pumps are located. Beyond these are effluent tanks which continue round the first corner. On the next 'side' there are non potable water tanks and beyond those fans and compressors. Passing through a doorway and round the next corner banks of filter drums line

RAF Daws Hill



Fans and beyond water tanks in the lower ring plant room -
Photo by Nick Catford



The 'Clean' entrance into the bunker with its steel and
concrete blast doors. Photo by Nick Catford

this entire side of the bunker. Beyond the filters and round the third corner there is another doorway and a ladder up to a higher level. The passage continues on the lower but has not been utilised from plant or equipment. Next to the ladder there is a vertical shaft with a hoist up to the top level for lowering equipment into the ring plant room. On the upper void level there are large floor standing electrical cabinets and beyond wooden racks for standby batteries. Passing the batteries the passage turns the final corner and

after a short distance there is a ladder back down to the lower level. The only access to this upper level plant area is by ladder. Two large mains transformers and control equipment complete the ring with steps back up to the opposite door in the entrance corridor.

Most of the rooms on this lower level have been stripped of any fixtures and fittings and although many of the rooms are numbered and coded but there is no indication what their use was although most doors have a board restricting access. Some of these read 'Restricted Access TS (Top Secret) Clearance Required', 'Restricted area 6 Level Security badge required' and 'You are leaving an SCIF (Special Communications Intelligence Facility) - do not discuss SCI, do not remove SCI'. There is also a large message window with a sign that reads 'Couriers you are responsible for checking your traffic before departing this service window'. In the corner on one room there is a large electrical rack with dials and wiring diagrams, possibly relating to the fire alarm system.

There are two stairways linking the three levels and adjacent to the stairs in the south west corner of the bunker there is a large hatch in the ceiling with a hoist on the upper floor for lowering and removing equipment and plant.

The majority of rooms on the middle floor have again been stripped of all fixtures and fittings although there is one large air conditioning and electrical plant room which appears to control the main electrical supply into the bunker and two smaller plant rooms. This floor has been used as a film set at some time in the recent past and many of the walls are covered in unusual patterned 'graffiti'.

The upper floor is divided into a number of very large rooms, again empty apart from ventilation trunk and cooling for racks of equipment.

The plant hoist is at the south west corner of the bunker adjacent to the emergency exit. Here there is a single blast door to the bottom of the emergency stairway where the motor and winch for the railed incline are located.

The bunker is dry throughout apart from some standing water in one of the small plant rooms in the middle level. The water supply has been disconnected but the electricity supply is still connected with lights working in most of the rooms.

Sources:

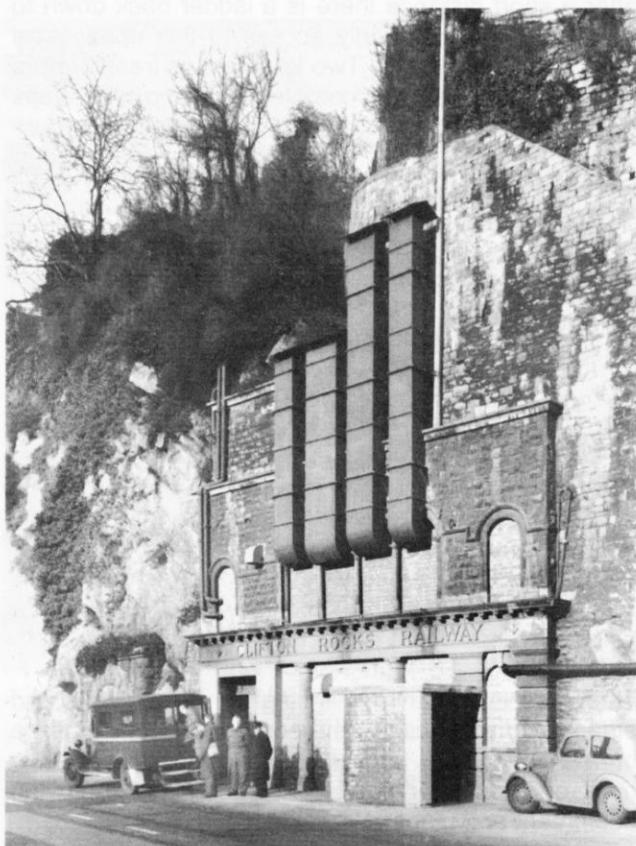
Squadron Leader Roger Atkinson, Liaison Officer RAF Daws Hill
Defence Estates

After the Battle No 87 (1995)

The Unsinkable Aircraft Carrier by Duncan Campbell
Bob Jenner, Keith Ward

From Nick Catford

The BBC at the Clifton Rocks Tunnel, Bristol



March 1942. The lower station façade in its rebuilt form but altered by the BBC, showing the ventilation intake and outlets, the aerial mast for reception and the diesel generator exhaust pipe over the car on the right.

The Clifton Rocks Railway tunnel is 500 feet long, semi elliptical in cross section with a roof height of 18 feet and a width of 27 feet 6 inches it climbs a vertical distance of 240 feet on a rising gradient of about 1:2.2, that is a vertical rise of 1 foot for every 2.2 feet of forward travel. The tunnel was blasted and cut through badly faulted limestone and was brick lined in almost its entirety with a wall thickness of 2 feet.

The tunnel opened to passenger traffic on 18th March 1893 and closed on 1st October 1934.

At the outbreak of the Second World War the Ministry of Works and Buildings took a tenancy of the tunnel from the Tramways Company at a rent of £100 per annum subject to conditions which required the Office of Works to indemnify the Tramways Company against any breach of the covenants in the lease under which the Tramways Company held the property.

On 25 March, 1940 British Overseas Airways constructed an office suite and used part of the upper section of the tunnel for storage. Control of the tunnel came under the ARP (Air Raid Precaution) Committee which later became the Civil Defence Committee during the War, where they established

shelter number 1898. During the early years of the war the tunnel was used as a shelter for the several hundred broadcasters then in Bristol. They had been evacuated from London and comprised the original local staff of a broadcasting BBC region, the Symphony Orchestra under the charge of Sir Adrian Boult and the whole London music department of the BBC, the London Variety department under its director John Watt, the schools department, the religious department and a number of administrative departments such as Finance, Listener Research, Filing, libraries such as music etc. Thus the region was swollen from a mere fifty or so people up to several hundred, with all the facilities needed for broadcasting.

I came into the picture because for my sins I happened to be the Engineer in Charge of the West Region pre-war. Also, as engineers are looked upon as the dogsbodies of the outfit, I was asked by the Regional Director Mr (later Sir) Gerald Beadle, to take on the job of organising and running the Air Raids Precautions work needed at the time.

I was also at the time very much concerned with the flimsiness [of the] shelters which we had prepared for our own small staff, i.e. the shored up basements of the old Victorian houses which were our regional HQ.

We had never expected to look after many hundreds of people – the only department which were supposed to be evacuated to Bristol was the Symphony Orchestra, the rest had come down without warning.

The most exposed to the bombing were Sir Adrian Boult's Symphony Orchestra involving nearly a hundred personnel. At first we had rented the Clifton Spa Hotel and its ballroom to accommodate them, but to our horror, and just before they arrived the Imperial Airways requisitioned the whole hotel over our heads. The BBC had no powers of requisition not being under the aegis of the government.

We had great difficulty in finding alternative accommodation for such a large orchestra but eventually the Co-Op Wholesale people came to our rescue (I joined the Co-Op forthwith in gratitude) and rented us their large hall and offices down in Bristol Centre. This was all right until the Nazis conquered France and Bristol came within easy range of enemy bombers. So I looked for a safer place than the Bristol Centre.

The old railway tunnel next that where Bristol archives were kept seemed a likely place for the orchestra from the shelter point of view, but how would an orchestra sound in the narrow confines of a

The BBC at the Clifton Rocks Tunnel, Bristol

railway tunnel? We decided to try and Sir Adrian assembled his orchestra of about sixty players then in the old tunnel. A record was made and to our amazement the musical quality was far better than expected. So we decided to put the matter to my bosses in London. The Director General, then F Ogilvie, came down a week or two later and I took him through the length of the tunnel holding up an Aladdin paraffin lamp. Alas however there had been an unpleasant raid on Bristol and particularly Avonmouth (about six miles away) and the tunnel was crowded with refugees, so we could hardly move. The city authorities offered to get rid of them, but we could not take it and gave up the idea.

Coming now to the actual Clifton Rocks tunnel. The Imperial Airways people had I suppose a bit of a conscience about the BBC and sometimes invited the Director of the BBC and myself to dine with them. On one occasion while we were having dinner some enemy aircraft began bombing the Suspension Bridge, which was a favourite target for bombers. The raid became pretty hot and the Imperial Airways officials suggested that we repaired to their shelters. This we did and found that their shelter was the upper portion of the Clifton Rocks Railway Tunnel.

I was at once interested in the rest of the tunnel, especially when they confirmed that there were about sixty feet of rock between them and the surface.

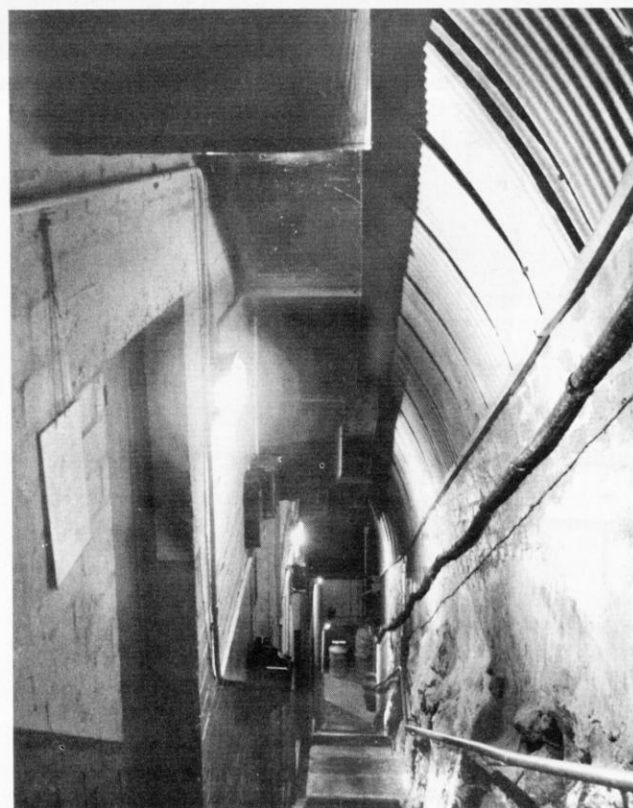
Although there was some opposition, the idea seemed to have general approval. The need for accommodation no longer mattered as far as the Symphony Orchestra was concerned for the bombs had got too much for them in Bristol and they fled to Bedford. The Variety department had also left Bristol – first of all we had transferred them to various halls and hotels in Weston super Mare, twenty miles away, and they had in turn fled to Bangor in North Wales. It was said that Hitler made a point of following the BBC's Variety department wherever they went because of the funny nasty things the comics of that department said about him on the air. Tommy Handley, Arthur Askey, Kenneth Horn and others were the main culprits.

So although there were still some London departments staying in Bristol such as Schools, Children's Hour and Admin, the departments requiring large halls etc. being no longer there, the new BBC station would not require large halls. This made the decision for the Tunnel much easier.

Before a decision was reached to go ahead, there were various meetings in Bristol between the London officials concerned and ourselves. I well remember the final meeting when the decision was reached to



March 1942. Gerald Daly sitting at his desk in the Transmitter Room.



March 1942. The west stairway looking down, with the Transmitter Room doorway on the left and the main extract ducting overhead. The corrugated iron lining to the bare rock and brick-lined tunnel was a BBC addition.

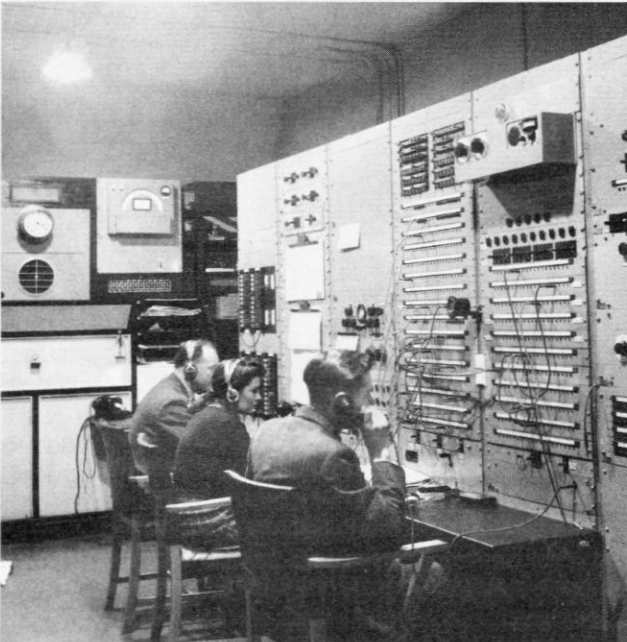
go ahead with the project because it lasted all night.

These meetings were held in the Regional Director's office (Mr Jely de Lotbinière) and about three a.m. the director said that as a decision was now reached and the discussion would now be largely technical, he would go to bed. We all had our beds in our offices during the war. We were amused because

The BBC at the Clifton Rocks Tunnel, Bristol



March 1942. The Studio, with mixer unit on the desk, microphone and gramophone bank, and the west stairway visible through the door.



March 1942. The Control Room, showing line termination and other equipment. After completion all the BBC's wartime programmes to Britain and Europe, and some even further a field, went through this panel.

when Lobby as we called him got into his bed, owing to his height, about 6.5 ft, his bare feet stuck out at the bottom. That impressed the meeting on my memory.

The next step was to get the owners of the Tunnel together and to get their permission. There was a snag here because the actual ownership of the now disused Tunnel was complicated. We had hitherto

dealt with the local city authorities, particularly the City Engineer, a Mr Bennet.

The firm which had originally built the Tunnel railway were the Bristol Tramways Company (the Chairman was Sir George White who had also started the Bristol Airplane Company, now the BAC with Concorde association). But they had leased the property from the Bristol Merchant Venturers, an old city concern going back to the Middle Ages and responsible for slave trading, pirates and privateers and voyages of discovery to America. Cabot was I think financed by them. Also concerned with the Tunnel

premises were the Downs Committee of the Bristol Corporation, who controlled any activity at all to do with Bristol Downs – a very upstage crowd indeed. With the help of the Bristol local authority, we invited everyone concerned whom we could find to a meeting in the actual tunnel to get their approval of the BBC scheme. I well remember this meeting. Representatives of the various people I have mentioned turned up together with others interested. The principal one of the latter was Sir Hugh Ellis, the Regional Commissioner of the West of England (he became virtual dictator of that area should there be an invasion and the main London government out of touch. I remember we sat on some odd chairs collected for the occasion in the lower part of the Tunnel, with water dripping down on the heads and knees of these distinguished gentlemen. The place was partially lit by one paraffin Aladdin lamp, and the surrounding gloom was quite eerie. The three old trams at the bottom of the incline could be dimly seen in the shadow. The discussion went on through the afternoon from 2 - 4 p.m. – everybody seemed to want to have their say. At last Sir Hugh Ellis said "I'm fed up with sitting here with the drips coming down on my bald head – has anyone any valid reason for not letting the BBC have their broadcasting station here in the Tunnel? If not I agree to the idea and the meeting is at an end."

At our meetings with our London staff we had already designed roughly the way in which the Tunnel Fortress, as it was somewhat romantically called, should be laid out.

The idea would be to have a series of rooms or

The BBC at the Clifton Rocks Tunnel, Bristol

chambers one above the other conforming to the gradient of the Tunnel ascent.

These would be at the top the transmitter room housing the local Bristol transmitter for the town and environs, a communications transmitter to keep in touch with the rest of the BBC stations up and down the British Isles in case the telephone links were disrupted and a spare transmitter.

Underneath this would be a recording room with various types of recording equipment and space to store records.

Under this would be the main control room with control room equipment and landline terminations to other BBC stations and numerous transmitters including overseas services. We were transmitting programmes in about forty different languages all over the world.

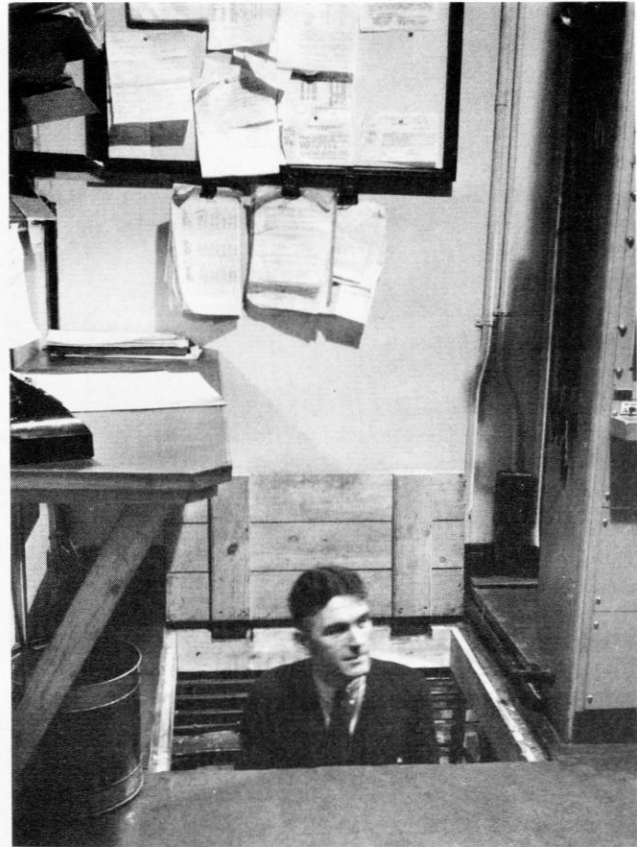
Under this would be the canteen, power room and stores to give us our own power if the mains electricity failed and we were cut right off.

The entrance to these chambers would be by means of the staircase which from the beginning of the Tunnel had been there. At the other end of each chamber was a trap door down into the chamber below for an alternative way out.

A good deal, of excavation had to be carried out on the solid rock and a special tunnel engineer was employed to do this particular work.

The planning was undertaken by The Maintenance Engineering department and the Building department of the BBC. The cost was £20,000. The engineers who were there permanently during the war were Q Fisher, Douglas Gibb, and F Dennis, Senior Engineers in charge of shift, while their staff including some girl engineers consisted of about four per shift of three shifts throughout the 24 hours.

The whole project took six months to finish and I moved the main engineering staff down to the tunnel in 1941. Henceforth for the rest of the war this was the nerve centre of the BBC in the West of England. Through the Tunnel control room for the next four years passed all the programmes of the BBC to home and overseas. We went back to the pre-war control room in Whiteladies Road at the end of the war. We held onto the Tunnel for nearly another two years – we only paid a peppercorn rent to the Bristol Corporation for renting it. I think it was about £5 a year. Then we removed all our equipment and the City took it over – the chambers of course remain, and it could be useful perhaps in a nuclear war. We



The emergency exit from the Control Room down to the Diesel Generator Room. There was a similar arrangement in each room.

of course made it gas proof, and with all that rock above even a nuclear explosion would have little effect I think.

A memory which still hangs around the back of my mind is the time when we were asked if Queen Mary, who had been evacuated to nearby Badminton, could see over it. It had been kept such a secret that we were surprised that she could ever have heard of it.

Anyway she came along, but as she was getting on we thought that she would not want to climb the hundreds of steps to see into each chamber, so we arranged that we would tell her about it in the entrance hall.

When she came however she said she wanted to see it all and started up the steps. She climbed to the very top apparently without losing her breath, while we men panted behind her very much out of breath.

We maintained a permanent military guard over the tunnel throughout the war by means of our own BBC Home Guard Company of the 11th Gloucestershire Regiment. Well known broadcasters were members of this Company: Sir Adrian Boult, Stuart Hibberd,

The BBC at the Clifton Rocks Tunnel, Bristol



March 1942. The Recording Room, showing the Philips-Miller film recording machine and film loops hanging over the cupboard on the left.



The recording room in September 2001 by Nick Catford

Uncle Mac and many musicians and variety stars of radio of those days. (For my sins and being as I say a local dogsbody I was Captain of the Company of course.)

As I have said the Control Room in the Tunnel handled all the home and overseas programmes of the BBC during the war. The Home and Forces (now

Light or Radio 2) and the various coloured networks of the propaganda and Empire and foreign services generally, i.e. Red network for programmes to the Dominions, Colonial Empire and the United States of America; the Blue network to Central and Western Europe and the Central Mediterranean; the Green network to the Near East in Arabic, Persian and Turkish, African, Hindustani and Maltese and Malaya; the Yellow network to Spain, Portugal Scandinavia and the Balkans.

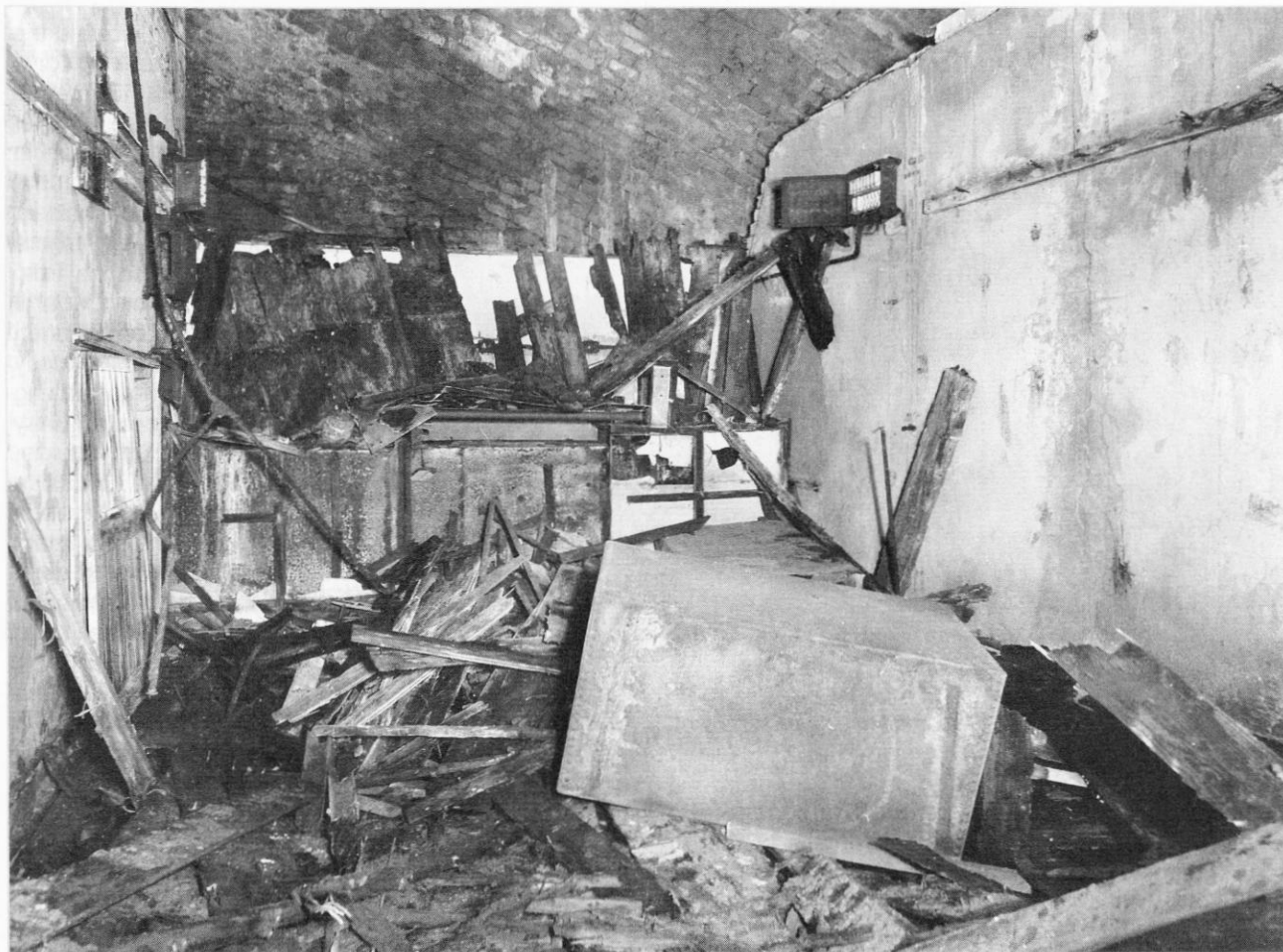
Of all this massive handling of foreign languages in our time in the Tunnel, only one serious technical hitch came to my attention. A programme from the Arabic quarter in Cardiff was scheduled to go out to the Middle East. Afterwards the engineer in charge of the shift, one Arthur Fisher, came to me and said that some of the staff were slightly doubtful if the Arabic programme in question was true Arabic. One of the engineers was in Allenby's Egyptian Army in the First War, knew a few words and was doubtful. However we heard no more of it until some weeks later a Welsh speaking professor of English in Cairo wrote to say that he had heard to his surprise a programme on the BBC's Overseas Service in the Welsh language on Welsh piggeries. The professor pointed out that few Arabs in the whole of the Middle East spoke Welsh and were not all that interested in Welsh pigs, so he thought such programmes should be dropped. We were at first puzzled but it suddenly occurred to us that someone somewhere or other had got mixed up and passed this pig programme instead of the intended Arab programme.

Apart from the control room operation at the Tunnel which was as I say, used throughout the war, most of the recording work was carried out there in the recording chamber. All recorded programmes were stores there too for safety's sake.

The studio was little used as we had only one real emergency, that was after a heavy raid when the city's water supply was blown up. The Regional Commissioner appointed two Bristol citizens whose voices would be familiar, a Mr Hindle (the City's Publicity Officer) and a Mr Wiltshire, a solicitor and musician. They broadcast warnings about the water supply on this occasion.

No sooner had we got properly settled in the safety of the Tunnel Broadcasting Station than air raids on Bristol petty well ceased as Hitler made his onslaught on Russia. The odd enemy aircraft sent on raids to the North used to drop a bomb or two at the Suspension Bridge but in the Tunnel we could not even hear the explosions. The main cause of complaint from the staff in the Tunnel was of the smell from the river at low tide – it was awful in spite of our gas curtains. The experts gave some relief by

The BBC at the Clifton Rocks Tunnel, Bristol



The Control Room in September 2001 by Nick Catford

introducing the continuous sparking from an induction coil – the smell of the air round the spark overcoming the river smell to a certain extent. (Curiously enough it was the same sort of induction coil spark whereby Marconi had transmitted the early wireless waves – so we were on familiar ground.)

In the darkest period of the bombing of Bristol there was talk, in the case of invasion or complete destruction of London, of the Tunnel becoming the BBC's last ditch.

Churchill had broadcast to the country that if we were driven out and conquered by the Nazis he would carry on with the British government from overseas. This, I understood from my mother in law who occasionally had dinner with the Churchill family, would be Canada probably. Thinking of me she said she once asked him if the BBC heads would go with him to Canada, and he said "What use would they be there. Let them make a last stand in their Bristol Tunnel – it's the best place for a last stand that I know of."

I had discussed making the Tunnel into a still more

secure place with my commander in Bristol – the military commander of the Bristol area – and he had agreed that our pre-war HQ in Whiteladies Road had little chance of stopping an enemy assault, but that the Tunnel was infinitely easier to defend and make secure, and that I should do so but not let anyone know, not even my second in command, who was Stuart Hibberd the famous announcer. The trouble was that Stuart, an ex soldier, was mad keen on making the old HQ in Whiteladies Road into a veritable fortress, and sandbagged and barbed wired it so that one could hardly get out or in. And I could not explain that we had no intention of trying to defend the old place and that the Tunnel was really our wartime fortress.

The apparatus was dismantled by us and the BBC's Equipment department in 1946-47.

The text forms part of a letter from Gerald Daly to researcher Patrick Handscombe on 23rd April 1974. Thanks to Patrick for allowing us to reproduce this letter.

**By Gerald H Daly former Head of Engineering
BBC West Region**

Sub Brit Visit to Ukraine May 2005



The first morning in Ukraine - photo by Robin Ware

Balakovla might be worth a trip if members were looking for a new holiday resort. Someone actually asked whether anyone was interested in organising a tour; at that stage, Mike was not at all interested. However, there was a 'private' response from Dan McKenzie, Nick Catford, Robin Ware and Mark Bennett and we were subsequently able to 'bully' him into making all the arrangements; very soon it was 'game on'. Luckily, Mike is a fluent Russian speaker having worked as a translator for many years before his retirement. I don't think the visit would have been feasible without the ability to communicate.

Sub Brit's recent visit to the former Soviet Union came about when one of our overseas members, Mike Barton, spotted an article in a Russian newspaper showing a picture of an underground submarine pen in Balakovla on the SW coast of the Crimea. Mike immediately posted details of this to the members mailing list and suggested that

As there are no direct flights to Crimea from England we were left with two options, fly to Kiev and hire a car or fly to Frankfurt from where there is one daily flight to Simferopol, the capital of the Crimea, albeit in the middle of the night. We opted for the latter which turned out to be a wise decision once we found out the condition of the Ukrainian roads – it would have



Sub Brit Visit to Ukraine May 2005

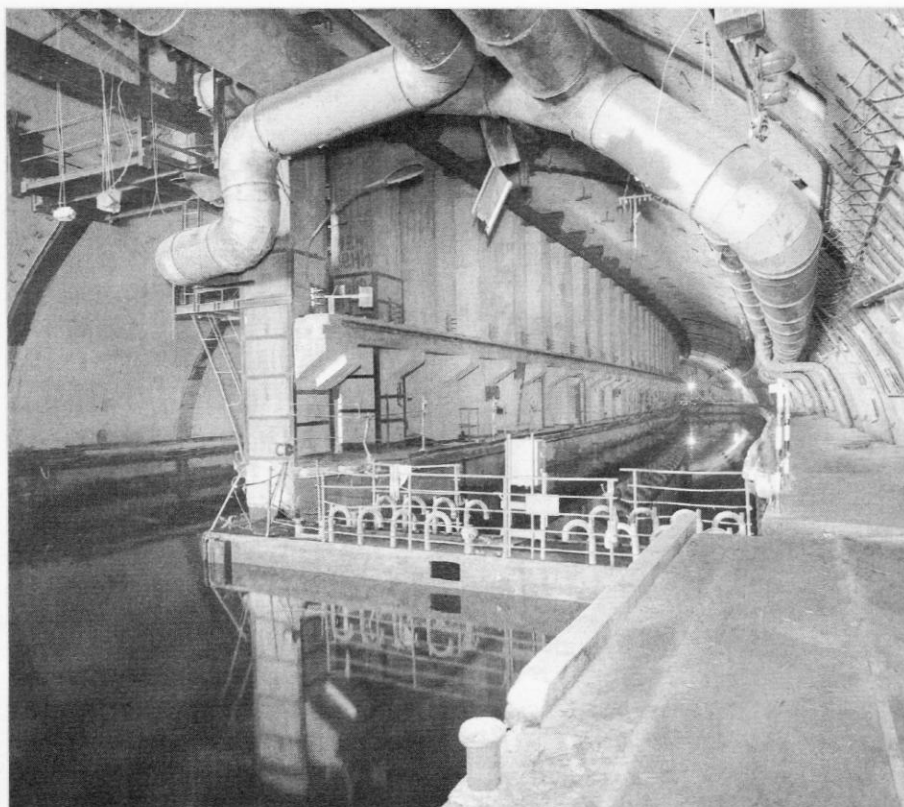
been a long and uncomfortable drive from Kiev! Luckily the Ukrainian government had lifted the need for visas for six months to encourage foreign visitors to attend the Eurovision Song Contest; this came too late for Dan and Mike who had already paid for their visas! It doesn't always pay to be quick off the mark.

Mike had arranged accommodation for us on the north side of Sevastopol Bay, a short ferry ride from the city centre and even better, our host agreed to collect us from the airport at 2 am and to provide daily transport during our week in Ukraine – it certainly helps to be fluent in Russian.

Having arrived in Frankfurt in the early morning on of the 6th May we met up with Mike who had flown in from Nuremburg and settled down in the airport, waiting for our late evening flight. As the departure time got closer there were worrying announcements about thick fog at Simferopol Airport which meant that our flight would at best be delayed or even cancelled. Luckily the fog began to lift and we eventually departed an hour behind schedule but at least we were in the air and heading east. No sooner had we taken off when the pilot announced that the fog had returned and unless it cleared in the next hour or so we would have to divert to Istanbul in Turkey, a fine start to our first Soviet excursion.

Luckily the fog did clear and we touched down at a dark and uninviting Simferopol Airport at 3 am. As we walked towards the terminal the lights came on and it was soon apparent that we had been transported back to another time – we were in the Soviet Union.

Immigration was slow, very slow, we were at the back of a very long queue and nobody was in a hurry. Two hours later we emerged into the car park and met up with our drivers, our host's husband Sergej and her best friend Svetlana. We were bundled into two beat up Ladas that would have had little difficulty failing a British MOT and began the 40 km drive to Sevastopol, our first experience of Russo-Ukrainian driving on pot-holed roads on a very dark night, weakly penetrated by the light from the candles at the front of the cars. Even though there was little traffic



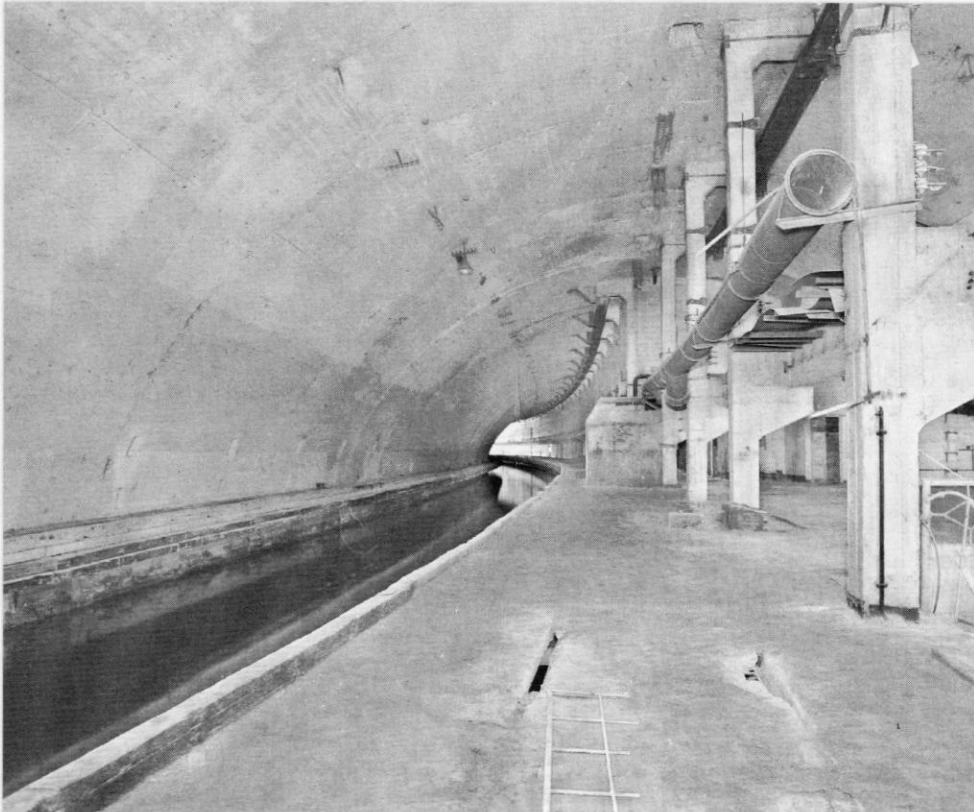
The Dry dock - Photo by Nick Catford

on the roads we still had one or two near misses! By the time we arrived at our guest house it was light but we had been up for 24 hours and were ready for 'bed'!

I'm sure, in Ukraine, our accommodation would have been considered perfectly adequate but to westerners used to creature comforts it would be generous to describe the rooms as basic. No carpet on the floor and low wooden beds with no springs and no mattress to speak of but what the heck, we were there to experience Ukrainian culture and to get a glimpse of a past era, we would all have settled for sleeping bags on the floor.

Having grabbed a few hours sleep, we went into the courtyard for breakfast and to meet our hosts Tatyana & Sergej. Both of them are Russian, Tatyana is a former KGB officer and is still a military reservist with plenty of contacts that were to come in useful later in the week. They are new to the hotel business and we were some of their first western guests; it was a learning experience all round. There was nothing else planned for the day so Sergej took us for a drive to see some of the sights of Sevastopol. With 6 of us crammed into the small family Lada (four on the back seat) it wasn't the most comfortable of rides! Luckily being a 'porker' I got to sit in the front in relative comfort.

Sub Brit Visit to Ukraine May 2005



Looking along the water channel towards the east entrance with the workshops on the right -
Photo by Nick Catford

The following day we decided to find the submarine base at Balaklava. We knew at least part of the installation was open to the public but had no idea about opening times or whether we would be able to get in.

Having arrived in the town centre we could clearly see a submarine entrance on the opposite side of the bay (see back cover of Subterranea 8) but before we had a chance to drive round to the other side we were stopped by the local police who were clearly not amused by six people in a Lada. This was to become a regular occurrence but it was usually just a matter of producing driving documents and a little local currency.

We were soon on our way to the submarine entrance on the opposite side of the bay; but the adjacent pedestrian entrance was locked and clearly there was nobody at home. We found the office of the director of the museum (this was originally the office for the military unit handling the nuclear warheads) and were pleased to discover that there was a school party visiting later that morning and we could tag on to the end of that so at least we would get an opportunity to see inside although there would clearly only be a limited opportunity for photography. We tried to arrange a private visit with more time but this

met with a frosty response from the director who was a 'jobsworth' and not very helpful. He said he would have to check with his bosses in Kiev and that we should come back and see him later in the day for their answer.

With a tour lasting an hour, it was clear we were only going to see a fraction of the facility. The base is divided into two areas north and south of the water channel with no underground connection between the two. The majority of the workshops, dry dock etc. are located on the north side of the channel but our visit was to the storage areas on the south side but first a brief history of

the facility. Having seen the wide spread destruction caused by the atomic bombs dropped on Hiroshima and Nagasaki in August 1945, Stalin ordered the construction of defence facilities to protect the Soviet submarine base at the port of Balaklava in southern Crimea. A nuclear burst over the town would have caused widespread devastation, including blocking the natural exit into the sea. In order to provide protection for the submarines of the Black Sea Fleet he ordered the construction of a massive underground complex for servicing and maintenance.

The harbour at Balaklava is an ideal location with easy access to the Black Sea. The base was built on western side of the bay with cliffs above reaching a height of 130m and providing ample protection for the installation below.

Construction started in 1954, not only at Balaklava but also under Sevastopol. When completed in 1961 it was given the codename Objekt 825. The base was designed to accommodate 1 division of the Black Sea Fleet, up to 10 submarines. Other Soviet Fleets (Pacific, Atlantic, Northern etc.) all had similar underground maintenance facilities.

The entrance to the base was a short distance into the bay from where an underground channel ran in a

Sub Brit Visit to Ukraine May 2005

semi circle for 500 metres emerging back into the inner bay opposite and close to the military harbour, (Balaklava still has an active Naval base).

Inflatable pontoons were provided to block each end of the channel if required and just inside each entrance, huge blast doors could be lowered into place to completely seal the channel; these blast doors were 7m high, 10m long and 2m thick, the doors took 40 minutes to close. Externally, additional protection

was provided by camouflage netting. The reinforced concrete walls around the base were 4.5 metres thick. At its widest the channel was 22 metres wide and 8.5 metres deep. The base covered a total internal area of 10,000 m².

The facility was designed to withstand the effect of a direct nuclear strike of up to 100 kilotons. There were heavy blast doors at all access points to seal off the inner area in the event of a nuclear threat thus enabling some 3,000 strong personnel to withstand a nuclear attack. But under 'normal' conditions some 150 personnel were employed inside the base, with a further 50 forming the permanent guard force outside.

The site was equipped with its own independent filtered air supply, powerful diesel generators for use in the event of a failure in the mains supply and underground fuel pipelines fed from tanks holding 4000 tonnes of fuel on the hillside above with an access tunnel unto the base. There was also an underground narrow gauge tramway for moving nuclear warheads around.

The base included workshops, munitions and torpedo storage facilities located on both sides of the channel. On the south side of the channel all the personnel were military while on the north side the majority were civilian but with a military unit servicing the submarines. In the centre of the facility there was a



The large and now empty workshops - Photo by Nick Catford

dry dock and beyond this the workshops. Every time a submarine entered the dry dock and water drained out, the personnel had to spend about 2 hours removing the fish from the bed of the dock, which had come in with the submarine. The fish were not returned to the sea, but decorated plates in Balaklava.

Offices and domestic accommodation was provided on an upper level accessed by stairs and a lift. The upper level included the reserve command post for the Black Sea Fleet, bakeries, hospital, mess halls, kitchens, bathrooms, shower rooms, recreation rooms and living quarters, for the personnel.

The estimated period of a complete overhaul of a submarine was a maximum of 3 weeks with the repair always running on time during 30 years of operations of the underground facility. Submarines always entered and exited the harbour at night, so the electricity in the town of Balaklava was regularly shut off during these hours of harbour manoeuvring.

Following the end of the cold war, the base closed in 1991, much of the equipment was removed by the departing Russians while the remaining equipment including pipe work, cables, tanks, and all the metal objects including stairways and handrails were gradually removed illegally by local people

Sub Brit Visit to Ukraine May 2005



The less obtrusive west entrance to the base - Photo by Nick Catford

We entered the base through an unimposing doorway at the back of a small builder's yard adjacent to the museum offices. A small blast protected building in one corner of the yard housed the charges that would have been used to blow the installation up if required. A short distance inside the entrance a chamber on the right housed air conditioning and ventilation plant although it barely seemed adequate for such a large facility. Ahead of us was the first of many blast doors that would have sealed the base in the event of a nuclear attack. Beyond this we came to a crossroads with empty storage bays left and right for nuclear warheads and torpedoes. There was a narrow gauge tramway in the centre of the tunnel with a turntable and a small flat bed truck. Beyond the crossroads was a long curving tunnel that took us through several more blast doors, eventually emerging at the water channel; this was what we had come to see.

Once the school children had their look we approached the side of the channel where there was nothing to stop anyone falling in to the deep water, this would be a health and safety nightmare at a British museum. To the right we could see the open entrance into the inner bay that we had seen earlier and across the water the entrance to the dry dock, but clearly no access from this side. A narrow walkway stretched out along the edge of the channel suspended over the water, it looked safe enough but this was the end of the public tour so we clearly weren't going to get the opportunity to see more.

As the children started to make their way back along the tunnel it was clear the leader at the front of the party had forgotten about us and it wasn't long before the chatter of children's voices could no longer be heard – we were alone at last. We could have stayed in there and explored everything on that side of the channel but that would have annoyed the museum staff who were probably waiting to lock up and go home; we didn't want to spoil our chances of coming back later in the week. In any case it was clear that the majority of the base was on the other side with no access from our location. We hurriedly took some photographs and retraced our steps to the entrance before we were missed.

Back at the office, the director had gone home so we still didn't know if an extended visit to the north side would be possible. On the way back to Sevastopol we stopped at Inkerman where we had seen entrances to huge underground limestone quarries in the hillside overlooking the town. We climbed up the steep hill to the quarry entrances which must have been at least 30 feet high but they didn't penetrate into the hillside for more than 30 – 40 metres so there was no scope for further underground exploration here so we returned to base.

May the 9th was Victory Day celebrating the end of The Great Patriotic War (as the Russians term the Second World War) against Nazi Germany, the 60th anniversary of the day Russian forces liberated Sevastopol.

In January and February 1944 German troops suffered a number of major defeats as a result of a Soviet offensive in Ukraine. The enemy was thrown 80 to 350 kilometres back from the Dnieper river and on April 10th the port of Odessa was liberated. The Nazis had executed 82,000 civilians and transported 78,000 back to Germany. Fighting for Crimea continued from the 8th to the 13th of April 1944.

On April 11th Soviet troops liberated Kerch close to the Russian border and on May 9th Sevastopol was liberated. 27,000 civilians had been killed in the city by the Nazis and 42,000 had been transported to

Sub Brit Visit to Ukraine May 2005

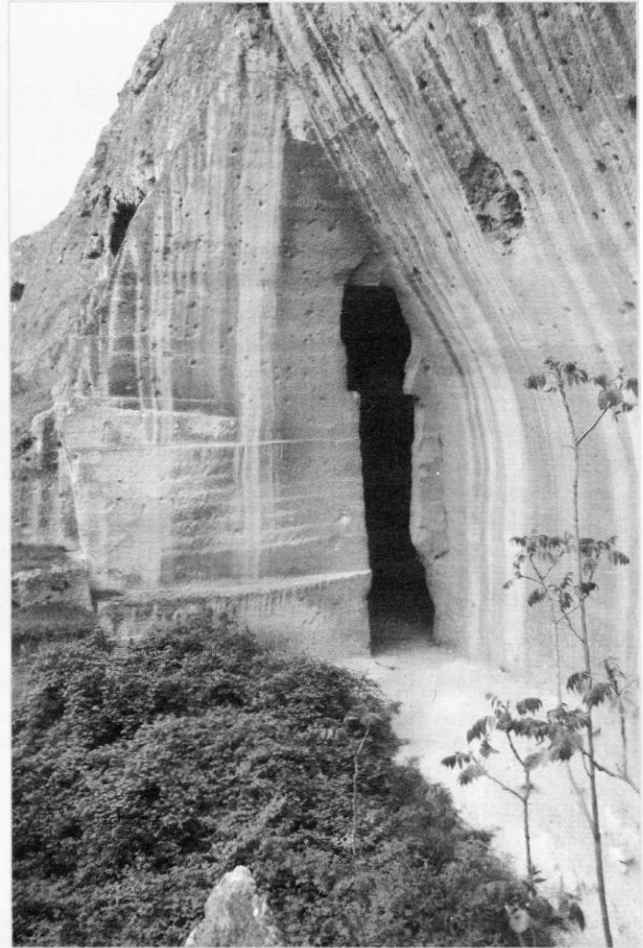
Germany. 3000 residents remained in the city by the time it was liberated and nearly all of Sevastopol was in ruins.

By the end of August the liberation of the Ukrainian republic was over. More than 123,000 soldiers received orders and medals, 160 were made Heroes of the Soviet Union. More than 5 million Ukrainians (over 3.8 million civilians and about 1.5 million POWs) had been killed by the Nazis and 2.4 million had been transported to Germany.

Each year the liberation of Sevastopol is celebrated with a Victory Day Parade on May 9th. Before the march through the main streets of the city there were patriotic speeches in Nakhimov Square praising the hero city of Sevastopol. The square and the city were packed to bursting with many veterans from WW2 and the cold war dressed in their finery. You've never seen so much large military headwear or so many chests full of medals. There were many visiting military ships in the harbour including vessels from Russia, Germany and even one from the United States the USS Carney. As part of its participation in Victory Day events, USS Carney embarked Ukrainian sailors for cross training and cultural exchange opportunities to better understand each other's capabilities and resources. The Russian Navy still has a permanent presence in Ukraine and will remain there until at least 2017. In the evening there was an impressive fireworks display from one of the Ukrainian Naval ships in the bay, our vantage point a memorial commemorating The Great Patriotic War at the rear of our guest house, overlooking Sevastopol Bay couldn't have been better.

The next day our destination was the Mangup Hills to see the ancient capital of Feodor, the fortress cave city of Mangup-Kale on a 600 metre high plateau. En route we passed a number of derelict coastal defence batteries on the outskirts of Sevastopol. We stopped first at Batteries 16 and 24, two long abandoned batteries built in 1913. The gun emplacements and underground magazines were intact and easy to explore.

The whole of the SW corner of the Crimea was protected during the Crimean War (1852) by a number of gun batteries. In the course of time, these were further developed so by the time of WWII they provided a formidable defence against any attack from the sea and were backed up by an equally formidable land force based on the Sevastopol garrison. By this time, the defensive lines had spread over the whole of the Crimea, with the batteries being able to provide mutual cover of the coastal approaches as a defence of the Black Sea Fleet's harbours and facilities.



Inkerman Stone Quarry - Photo By Nick Catford

Some 13 batteries all told with the main armament being 100 - 305 mm guns. The 305 mm guns, for example, had a rate of fire of two rounds a minute and could traverse through 360 degrees. Turret armour was 305 mm thick at the sides and 203 mm thick on top. There was also an armoured train together with its own large gun. The Sevastopol batteries are generally single-storey constructions with the exception of the turreted versions.

The Germans attacked the Crimea with their 11th Army in the autumn of 1941 with the eventual aim of incorporating the peninsula into the Third Reich, populating it with Germans, having first evicted the original inhabitants. The batteries passed through a mixed history, having to give their Russian names for German names as the Germans gradually moved up northwards through the Crimea.

Our attention was drawn to one battery that we could see on a ridge some distance ahead of us. We could clearly see the barrels of at least two guns so we quickly made a beeline for the location. To our surprise, we found that the battery was not only still armed but also still manned albeit with just two soldiers in a 'caretaking' role. We thought it prudent

Sub Brit Visit to Ukraine May 2005



Magup-Kale - Inside one of the underground Orthodox churches - Photo by Nick Catford



Magup-Kale - Nothing of the underground churches is visible on the surface apart from the entrance stairway (right). They are all built close to the cliff edge with windows in the cliff face. Photo by Nick Catford

was located north of Sevastopol at the estuary of the river Belbek.

In December 1941 the barrel of 30 Battery wore out and had to be replaced. The peacetime standard procedure laid down a time of 60 days for this operation, and that with the aid of a 75-tonne crane. The battery crew replaced the barrel manually in 16 days with the aid of a small crane and jacks.

On arrival at Mangup-Kale it was clearly going to be a very steep 2km climb up to the plateau which covers an area of some 90 hectares, so the party split up to let the fitter amongst us go ahead. Little did we know, until we got back, that there was an off road vehicle available that would have taken us to the top for the equivalent of just 50p! Along side the steep path we passed a large number of ancient grave stones.

The ancient capital of the Feodor was the largest fortress and city in Crimea for about 500 years. The fortress was located on a plateau which is shaped like a four-fingered hand with a sheer drop on three sides. The fort was built in the 6th century by Justinian I and was later

to ask permission to take photographs and to our surprise they said "yes" so long as we stayed outside the perimeter fence which passed within about forty feet of the two triple gun turrets. The battery was known by the Germans as Maxim Gorki 1 and by the Russians as Battery 30, a 305mm coastal defence battery for two guns (not the present triple turrets). It

inhabited by the Crimean Greeks as a good vantage point but despite its strategic location the city was eventually taken by the Turks in the 15th century after a six month siege and a certain amount of trickery.

There are many ruins still visible today relating to its

Sub Brit Visit to Ukraine May 2005

diverse use until the 1700's when it was deserted. The original Byzantine ramparts, the citadel, several Orthodox cave churches, the mosque and the underground dungeons are all still intact and open for exploration. Most of the underground structures are located on the east finger of the plateau.

In our absence, our host Tatyana had made a number of phone calls to ensure that we did get to see the more interesting northern side of the submarine base at Balaklava. We were left with two options; she had used her military connections to arrange a small naval boat to take us from Sevastopol to Balaklava and into the submarine base or we could go into the base with the museums chief guide for a fee.

Having been there two days earlier we knew you could no longer get into the channel by boat and in any case the cost was prohibitively expensive so we opted for the second option. Tatyana had spoken personally with the museums director and was quickly able to persuade him to let us in, we don't know exactly what she said but clearly she is a lady you don't say no to.

We arrived back at Balaklava the following morning to meet our Russian guide. Yuri worked for the Russian Ministry of Defence for 25 years and at one time was chief engineer at the facility. There were no time limits and we had the freedom to go wherever we wanted on the north side. Unfortunately the upper level was no longer accessible as the stairs had been removed and the only possible means of access was by climbing up the narrow lift shaft – we left that for another day. There is some lighting on the north side and eventually the museum hope to open this up to the public as well but for now it is just as the illegal scrap merchants left it after stripping out the remaining



Maxim Gorki The triple turret at Maxim Gorki 1 Battery still providing coastal defence for the Sevastopol region of Crimea. - Photo by Nick Catford

fixtures and fittings. Our point of entry was alongside the eastern entrance to the channel where a long tunnel eventually brought us to the dry dock. From there we made our way along the walkway alongside the channel to the western entrance. It is at this point



Cold War photo of Balaklava Harbour- complete with soviet submarine - Source unknown.

that many of the vandals have gained access in the past. To prevent this happening in the future, the final 15 feet of the walkway has been removed and

Sub Brit Visit to Ukraine May 2005



Local school pupils guarding the war memorial in Nakhimov Square - Photo by Mark Bennett

razor wire has been fixed to the top of the entrance blast door which has been dropped into the channel to stop boats getting in. Swimming is not advisable; the water is teeming with jellyfish.

We retraced our steps back to the dry dock and on to the workshops beyond, here virtually everything has gone apart from the bed of the huge lathe used for working on the main shaft of the submarines. Close to the east entrance there was another small ventilation plant room with its fan and trunking still in place but looking totally out of place in such a vast complex.

We made our way back to the entrance through a series of smaller workshops and storage areas where there was still quite a lot of Russian signage painted on the walls. There were a number of circuit diagrams and other notices relating to health and safety. One such sign read "When you come to work with weapons and ammunition handle them very carefully. Failure to observe the regulations is inadmissible because you can cause accidents". At the end of the workshop area there were a number of

small blast doors back into the entrance passage.

Our week in Ukraine was drawing to a close, we had achieved our main aim to get inside and photograph the Soviet submarine base so everything else would be an anti-climax. We spent the next day in Sevastopol, passing through Nakhimov Square it was interesting to see the huge war memorial, guarded by selected pupils from local schools carrying light versions of the Kalashnikov machine gun. Today's agenda included a number of museums, these included the Black Fleet Museum a museum about the resistance in the city during The Great Patriotic War and perhaps most impressive of all, a diorama vividly depicting the Crimean War in 3D.

After catching a trolleybus back into town (the fare was the equivalent of 2p) we took a boat trip around the harbour passing two Ukrainian Naval bases where we saw two aging submarines one of which was listing quite badly.

On our final day we drove to the south side of the city where we found some more derelict coastal batteries. The most impressive was Maxim Gorki II (as called by the Germans in WW2), located on Cape Chersones, to the SW of Sevastopol and intended to cover the western approaches to the Crimea and to give additional support to the two lighter batteries on the south coast, Batteries 18 and 19. The Russian name was Battery 35. It had four 305 mm guns, located in twin turrets. The guns could fire a 471 kg shell some 27 km and a 314 kg HE shell almost 46 km with a rate of fire of two rounds a minute.

Battery No. 35 had a 'miniature town' underground to provide the relevant support; with the amount of cement work required being the equivalent of that found in hydroelectric dams. Each gun tower was surrounded by 2 shell supply rings, each holding 201 shells and two charge (the propellant) rings, each holding 402 semi-charges. Beneath each turret was a narrow gauge railway to bring the shells and charges to the breach position, the actual loading and charging being effected with the aid of electrical drives. Each turret had a 54-man gun crew. Battery No. 35, (Maxim Gorki II), came into service in 1928.

During the 250-day siege of Sevastopol in WW2, the battery took on the role at one stage of being the command post for the whole of the Sevastopol Defensive Area. The battery was destroyed by the Russians themselves on the night of July 1, 1942 to prevent it falling into the hands of the Germans and Romanians. In bitter fighting from October 1941, when the German 11th Army invaded the Crimea, until mid-1942, when the Russians had to leave the Crimea, 200,000 Russians were killed, with a further 95,000 becoming PoW's; the Germans lost 300,000.

Sub Brit Visit to Ukraine May 2005

The defence of Sevastopol was a major military achievement in WW2 in view of the outstanding resistance and seriously disrupted German plans for the further advance into Russia.

Despite the damage done by the Russians most of the underground areas can still be entered with care and although the roof has come down in places it is possible to reach the two huge gun emplacements underground. In places sections of the floor have collapsed into a lower level but there was no obvious way down so further exploration will have to wait for another day.

With our flight not leaving till 2 am the next morning we took the opportunity to rest during the evening until our two beat up Ladas returned at midnight to take us back to Simferopol. True to form we were stopped by the police on our way to the airport but once some currency changed hands we were allowed to continue with our journey. We were quickly though customs but it came as no surprise that the plane was late, Ukraine is a country that's not in a hurry to go anywhere.



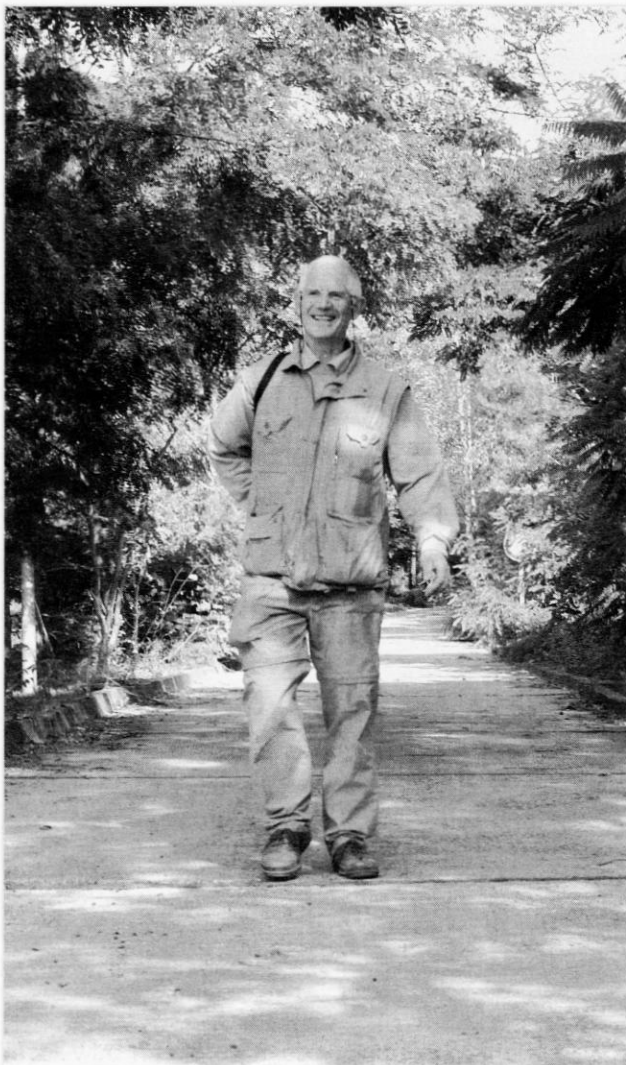
One of the many gun batteries located around Sevastopol, now a monument - Photo by Dan McKenzie

Article From Nick Catford with additional information from Mike Barton, Dan McKenzie, Robin Ware and Mark Bennett



Soviet PT-76 (PT = *Plavayushchiy Tank* - Amphibious Tank) outside a naval base near Balaklava Photo by Dan McKenzie

Never Again!



Never Again! or an idiot's guide to organising tours

by Mike "done it, seen it, got the video" Barton

There have been several enquiries to the SubBrit postings by madmen enquiring as to how they should organise a visit to a site of neurotic interest. In view of the fact that I have just organised such a visit and everyone appears to have returned to the UK without being arrested or getting lost (Even though your editor did a runner from the hotel in the middle of the night!), I thought it might be useful if I put pen to paper, or nowadays fingers to keys, and jotted down a few hints about organising trips.

There are several requirements for people filling this post, the prime consideration is that of being a masochist. You are then faced with answering a number of basic questions:

Where do we want to go? When can we go? How large should the group be? What are the costs involved? How do we get there? What do we wear?

Why the hell am I doing this?

Stating the obvious, you really do have to have somewhere to visit, i.e. something substantial that is of interest and where the visit will take some time as there is no point in bodies traipsing around half the world or going to East Anglia if it'll all be over in twenty minutes. It is therefore useful to look around and see what else there is within reasonable striking distance in order to combine several sites into one day.

When can we go? This depends on the first set of answers, since you're not really being kind to your fellow-creatures if you keep them outside for the whole day in the middle of winter on the top of a moor. The time of the year also affects daylight and the length of the day, at least it does over here in the Fatherland. So think about Spring to Autumn for any outdoor activities that will last for a number of hours. This is generally also important for the photographers in the group. These can be a very touchy clientele and should be treated firmly so that they do not get out of hand. They may, however, be tolerated for short spells (in so doing, you gain a few plus points with the perishers, which is always useful as there will always be moaning minnies in the group, so it's nice to have someone on your side). You can also demonstrate your photographic expertise by reminding them to remove lens caps before taking photos and that lenses will mist over when moving indoors, i.e. a bunker, from minus 10 temperatures outside. They are normally so agog at the view behind the bunker door that their minds turn to jelly and the first few shots look like a pea-souper.

How large should the group be? Depends on where you're going to, how much you love humanity, to what degree you want to inflict SubBritters on other people, whether you personally want to go back to the site at some time on your own. Another important factor here is whether bodies are going to be overnighing anywhere as you will then need to find a hotel with sufficient beds and, preferably, with a restaurant offering a reasonable range of burnt offerings.

What are the costs involved? Well, we've just considered hotels (B&B is generally out of the question as this will scatter bodies around the vicinity and you will then have to go into sheepdog mode in the morning to round them all up since they will certainly not be able to find their way back to you), so there is the cost of a bed, food, travel to the site, entrance fees to mention just the basics. You may also need to consider stopping off for snacks en route. All this needs to be added up (by you, need I mention), so that the group gets an idea up front of what the skive is going to cost so that they can adjust their wives' allowances accordingly beforehand.

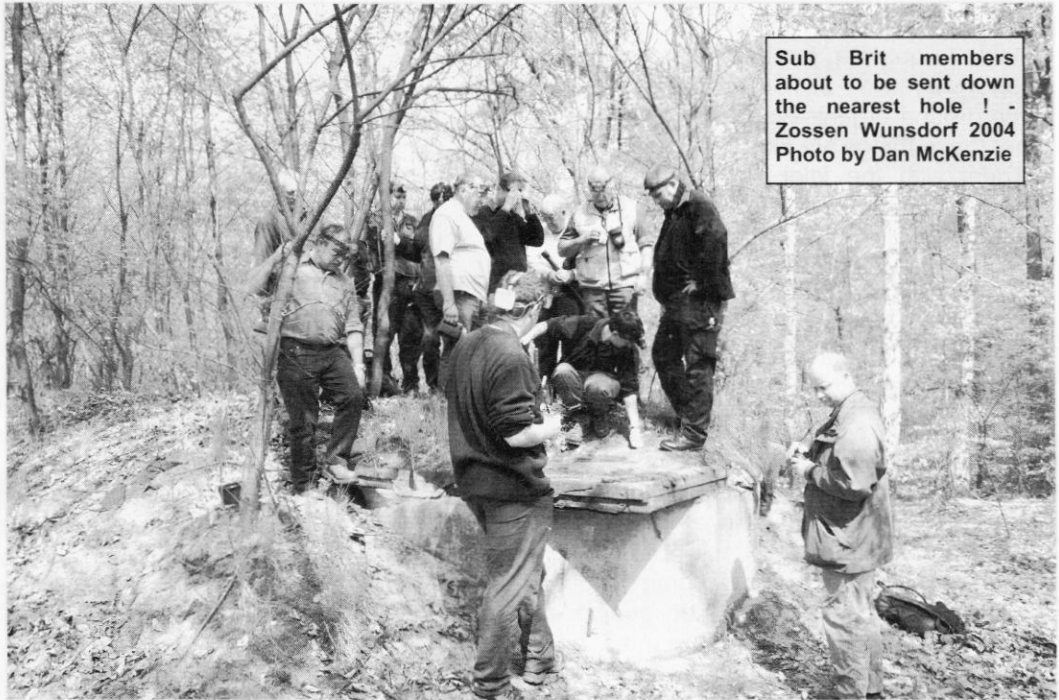
Never Again!

How do we get there? An aspect which is often forgotten. For a lot of the Sub Brit trips this now includes flights. People will need ample time to make use of cheap flights being offered by K a z a k h s t a n Airlines, so don't make life difficult for them and let them know the details in good time. Do NOT book all the seats for the entire group yourself otherwise you will end up paying for those who drop out at the last minute. Let the perishers book their own seats, but do tell them where you're flying to, on which date and with which airline. This all helps to make a trip successful.

If you are flying, do you need hire cars once you have landed? Yup? Well think on and get them booked beforehand. As an organiser you must sort out RVs (rendezvous for the linguistically gifted, meeting point for the rest of you), the time when you will meet to start the first visit and how you will get there. The latter point brings me to route-cards.

There are lots of fancy PC programmes on the market which will plot your travels from A to B. Do not use them! You will finish up with some twenty sheets of A4 in your hand since they will guide you round every bend imaginable in the road, so that after two sheets you find that you are still on the A2 heading for Dundee (yes, I do know that Dundee is not on the A2, it is simply an example!!). What you have to do is to look at a road map yourself since, as the organiser, you should know where you want to visit. Sweeping brushstrokes is the answer, bold directions. Act as if you were Montgomery in the desert and send your troops to hell.

You should also ensure that each and every driver has a copy of the route-card and not just you in the lead vehicle. Firstly, you may just be lucky and drop dead so that you miss out on all the hassle from the trip, but secondly, and more important and more likely, some burk is bound to get lost due to a civilian inability to drive in convoys of more than two cars. And just do not trust navigation gizmos in the car:



Sub Brit members about to be sent down the nearest hole ! - Zossen Wunsdorf 2004
Photo by Dan McKenzie

they work off a CD programme or are linked to space satellites, but they have NOT read your route-card.

Rule number one: you drive as fast as the car behind you, not like a bat out of hell in a supercharged Mercedes that you have just hired. Nor should you feel great by successfully driving though a dark shade of orange at traffic lights and making pedestrians leap for their lives. Watch the lights and the cars behind you: slow down slightly before a set of lights so that you can safely close up and go through together. If you don't all get through in one go, the last man should never try to trigger the radar camera on the far side of the crossing. Just wait! The lead group should have pulled off the road somewhere ahead: flash your lights as you approach them and you can continue smoothly on your way.

Flashing your lights: yes, another little point. Do agree beforehand on any light signals when driving if you can't contact each other via mobiles (think about swapping telephone numbers before you drive off, there's good people). It is not unknown for drivers of hire cars not to know what is their windscreen wash lever and what is their full-beam lever so expect a few hiccups over the first few miles or kilometers (Oops that will be me then! Ed)

Are you going to be abroad? Does anyone speak the funny language you're going to be listening to? What about interpreters? And she may have a super figure, but if she knows nothing about bunkers, blast doors, thermostatic dingoes, etc., she won't be much use to you as an interpreter, and what happens afterwards has nothing to do with the visit.

Never Again!

What do we wear? Weather again, inside or outside? Footwear, torches, overalls. Yes, I know we are all in a bunker-cum-underground organisation and we all know what these things are like, but you still have to deal with the idiot factor and explain carefully what the kiddies are going to wear since they will be away from mummy for the day. It's up to them to think about battery chargers and the like, so that's one thing less for you to think about, but be prepared to apologise to the hotel when the power system is overloaded.

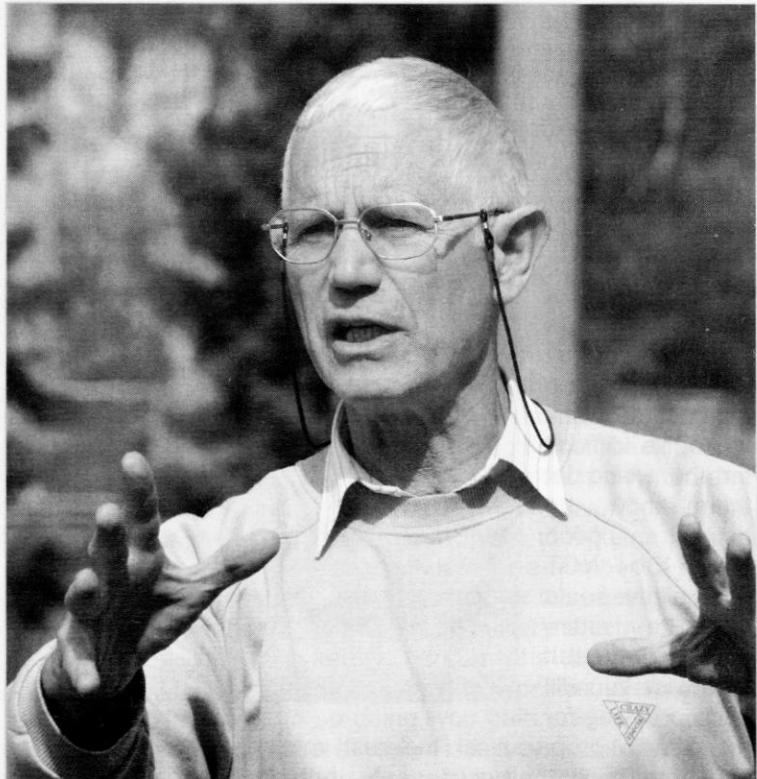
Administration: contact hotels in good time as Murphy's law says that that is the one weekend when the hotel is going to be full. And don't forget to play the discount card: you are bringing a bunch of hungry savages to the joint for accommodation, food and booze. Think about adding a couple of non-existent hotel names and addresses to the distribution list, strike them all out except for the one you are interested in and ask for a quote. It nearly always works.

Incidentally, you will probably have put a lot of time and effort into organising the trip, so do contact the sites to be visited some 10 days before the trip starts just to confirm that you are still coming and that they, the hosts, are still alive and at home.

Food? At least one hot meal a day normally keeps the troops happy, but there will be those who want to make a meal of it (sorry!), calling for the wine card and with special requests as to how the food is to be served. They are on their own - don't get involved. If you're in lands of foreign tongues then I can recommend my patented menu operation: once the bodies are seated round the table, call for silence and work through the menu, giving a brief translation of the main dishes. Get the kiddies to leave a sticky finger on any dish that sounds good / edible. If they hear of a tastier one later, they only need to drag their digit down the page.

Once everyone has found something, go round the table with the waiter or waitress in one direction and collect the orders, with the individuals quoting their room number with their order. The food can later then be charged to their rooms, saving lots of time, trying to work out what everyone has eaten.

Do not mollycoddle the group - you are in charge so exercise a firm hand. If you are married, you'll know what I mean, so now it's your turn to try it out on other people! Think what you're going to do, tell the group quite clearly and then do it.



Mike in full flow! Photo by Dan McKenzie

Time is another important aspect: give them time to zonk, go to the loo, pick their noses or whatever, but stick to the time. If you say the coach goes at 08.00, it goes at 08.00 so don't wait for anyone! You'll only need to do it once and the group will see that you mean business: there is also something humorous that appeals to all of us when we can see a guy trying to run after the coach with a suitcase, tripod, camera gear in his hands and around his neck - enjoy the moment. Just make sure that you told them the evening before where you are heading for in the morning so that they can catch you up later - and just listen to their whining excuses.

Troublemakers? No big deal. Play your cards right and you'll have practically everyone on your side as they don't want to be messed around either. At the end of each trip, carry out a 2BM assessment of everyone in the group. 2BM? Big black mark! Anyone with more than one 2BM to his name is never invited again. And if, after reading this, you do actually organise a trip, then you can always finish off at the end with those memorable words:

Never Again!

PS. The author would like to express his thanks to participants of past tours, who have made his life so miserable for days or weeks at a time and turned his hair white, but who gave him the inspiration to write the drivel above.

Mike Barton

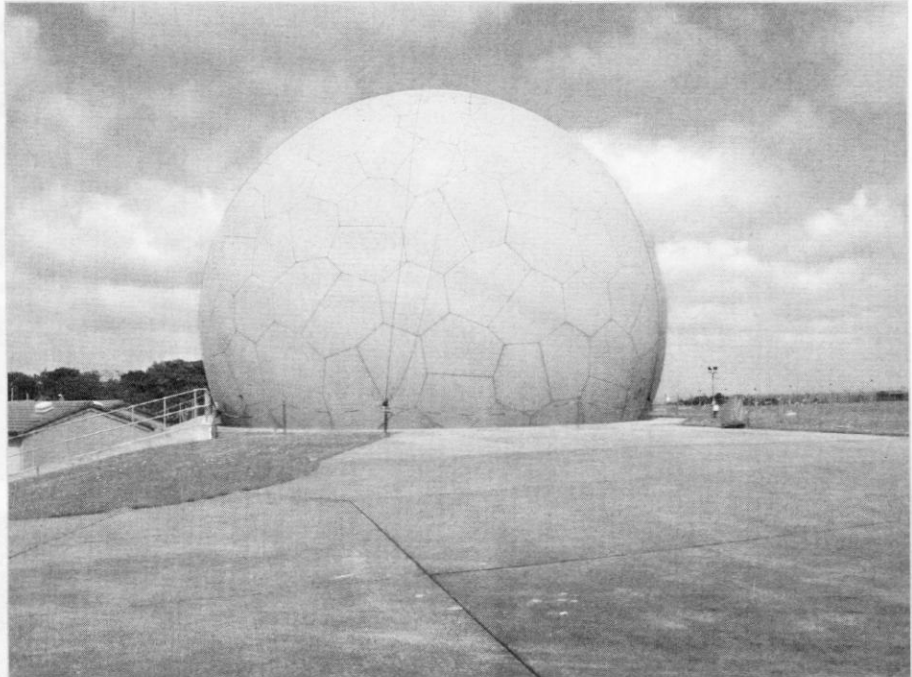
RAF Trimingham – CEW Rotor Radar Station

Trimingham Radar Station was established in late 1941 as an army coastal defence radar station for detecting German E-Boats and low flying aircraft; it was equipped with a CD Mk.4 radar. Trimingham was also chosen as an 'Oboe' station equipped with Type 9000 equipment for navigational purposes to assist bombers to pinpoint European targets. It was transferred from the War Office to the Air Ministry on 29.4.1942 becoming a Chain Home Extra Low (CHEL)/CD with a Type 54 radar on a 200 foot tower. The 'Oboe' equipment had been removed by 1945. In 1947 Trimingham was placed in the Northern Signals Area under 90 Group. On 15.4.1948 Trimingham was placed on care and maintenance but was operational once again from 1.6.1949 and on 17.2.1950 the CHEL was transferred from 90 Group to Fighter Command and from 1.11.1951 was renamed 432 Signals Unit.

In June 1950 RAF Trimingham was selected for the ROTOR program as a Centimetric Early Warning Station (CEW). In the provisional plan (17.12.1950) the station was to be equipped with, the Type 54 on a 200 foot tower, one Type 13 Mk IV height finding radar on a plinth, one Type 14 Mk. 8 (on a plinth) and one Type 14 Mk. 9 (on a gantry) surveillance radars. The station was completed in November 1952 coming on line early the following year.

Operations were centered in an R1 single level underground bunker accessed from the rear of a standard guardhouse/bungalow, a single storey building with a pitched tile roof and a veranda at the front. At the rear is a square stairwell and plant entrance with a flat roof. Internally there was a guardroom, armoury, stores and rest room.

In August 1952 Trimingham



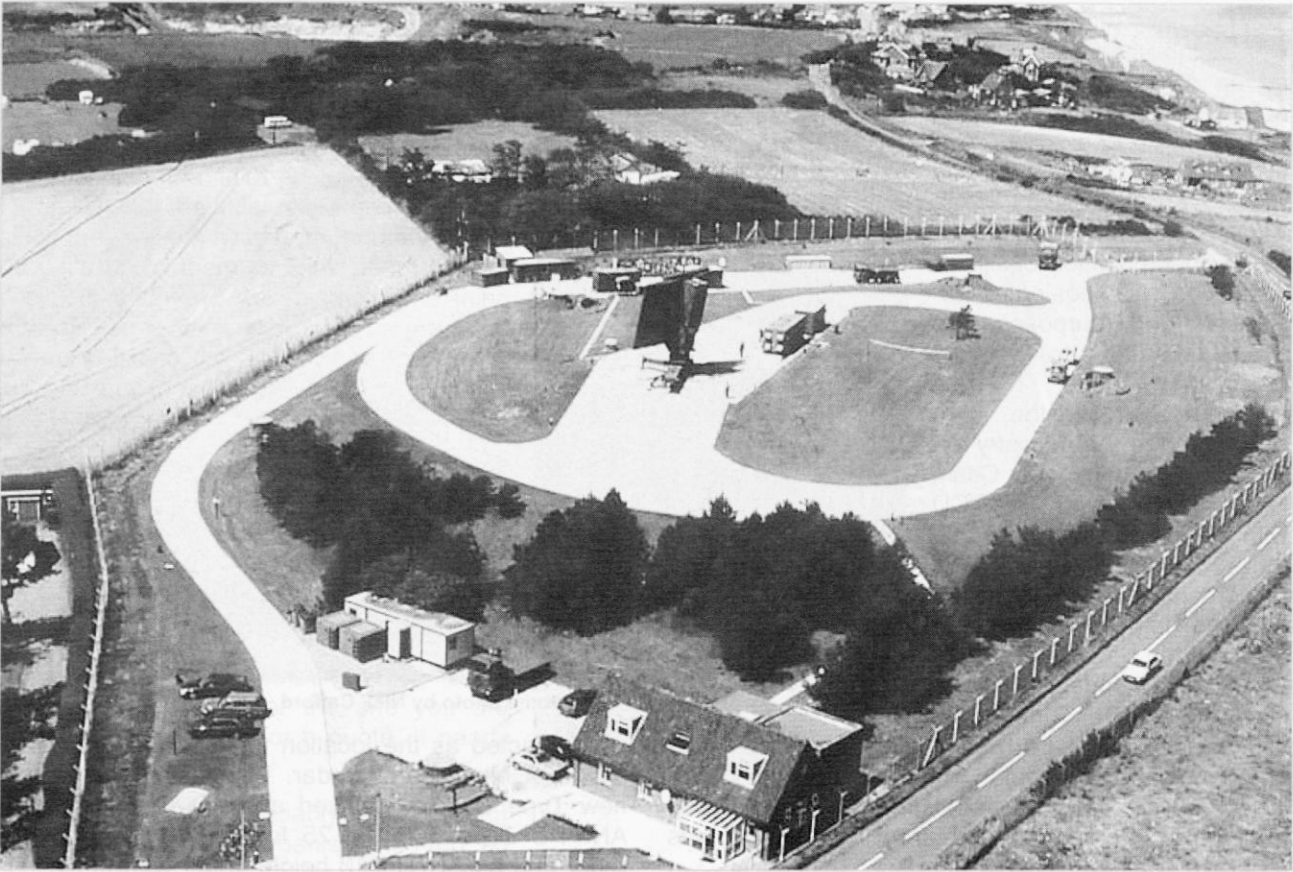
The radome photo by Nick Catford

was selected as the location for the first production Type 80 Mk1 search radar. The installation of the new Type 80 was delayed and an American Type AN-FPS Type 3 (on a 25 foot gantry) long range radar and an AN/TPS10 height finder were installed. The Type 80 was finally installed in 1954 and handed over to the RAF on 10.2.1955 making the two Type 14's redundant, these were dismantled and removed. This was one of five Type 80 Mk 1's installed throughout the UK. Trimingham was retained as a CEW station under the 1958 plan closing on



The Guardhouse photo by Nick Catford

RAF Trimingham – CEW Rotor Radar Station



Aerial view of RAF Trimingham before the radar was enclosed in a radome

15.2.1961, it had also continued in its CHEL role utilising the Type 54 Mk3 during this period.

In 1965, air photographs show the station had been largely dismantled and all the radar arrays had been removed apart from the Type 54 behind Beacon Hill Cottage; but that was gone by 1972. By 1981 the station was closed and the site had been sold and the guardhouse converted into a private house.

Trimingham was repurchased by the RAF in the late 1980's with the installation of a Marconi Type 91 'Martello' radar operated by 432 Signals Unit acting as a Ready Platform (along with RAF Hopton and RAF Weybourne) for the UKADGE Series II (Upgraded Air Defence Ground Environment) Radar System controlled from the R3 underground control centre at RAF Neatishead. The guardhouse was converted into crew accommodation, offices and basic mess facilities. An upper storey was created in the roof space and the external veranda along the front of the building was removed.

The earth mound covering the bunker was removed and the site shaved to the concrete roof of the bunker. This was then built up with the ready platform on top of a new grassed mound. Roads were then made to allow vehicle access to the top surface, on which the remote radars would be sited. In May 1987

its Type 91 radar was sold to the Turkish Ministry of Defence and it was replaced by a Type 93 (Plessey type ADGE-305, NATO designation TGRI 50011) that had been moved from Hopton. Following the removal of the Type 93 Hopton closed.

Although originally a mobile installation in December 1997 the Type 93 was given a permanent mounting with a Kevlon dome composed of irregular polygons erected around it. The Type 93 is still operational feeding data back to the Control and Reporting Centre (CRC) at RAF Boulmer in Northumberland. RAF Neatishead has now been downgraded to a remote radar head which is actually at Trimingham. Neatishead only being retained as the circuits from Trimingham pass through Neatishead.

Sub Brit visit to RAF Trimingham on 7th June 2005

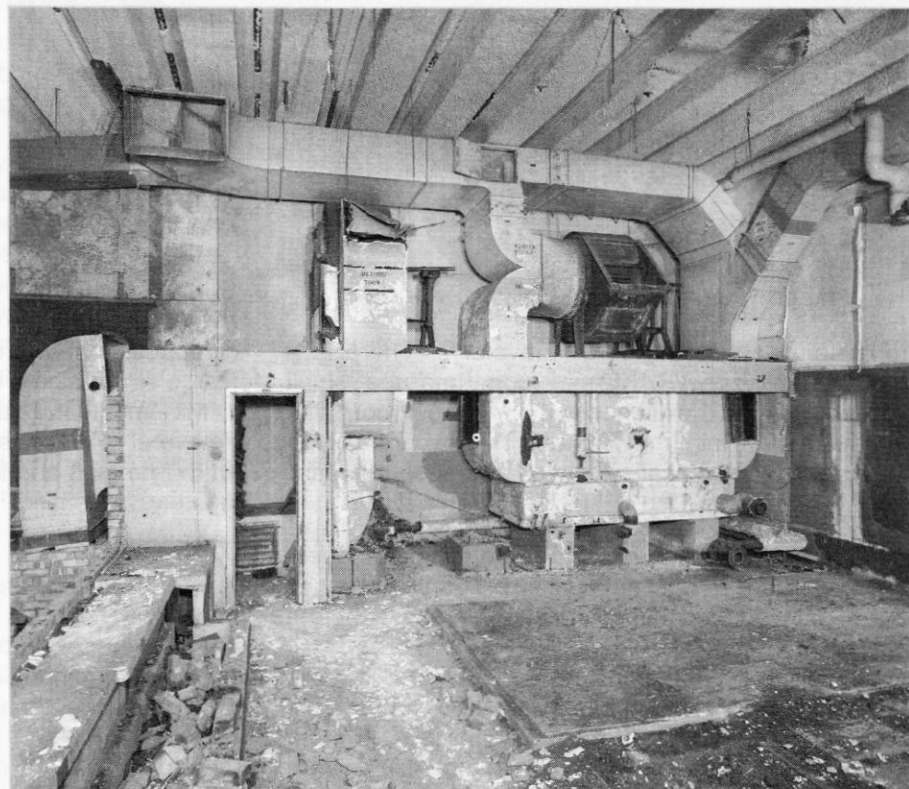
The guardhouse is still in RAF use and access to the R1 bunker has been retained. The stairwell is used as a recreation room with a pool table and the first section of the sloping entrance tunnel has been utilised as a locker room. A short distance along the tunnel a wall has been built across the passage with a wooden door. Beyond this the bunker is abandoned and unlit. At the end of the tunnel there

RAF Trimingham – CEW Rotor Radar Station

is a transformer recess on the left and the cable entry point on the right. The passage then does a dog leg left and right into the main east - west spine corridor, there were originally blast doors at this point but these have now been removed. Some sections of wooden flooring along the corridor have been removed and replaced with temporary plywood panels.

Many of the original partition walls have now been removed leaving two rooms on the left and ten rooms on the right. All the original teak secondary flooring has been removed from all the rooms on the left side leaving a drop down to floor level from the corridor. The rooms has been completely stripped apart from the brick supports for the now removed wooden floor and ventilation trunking. The first entrance on the left led to the workshop and on to the radar office, the second entrance led to the Track Telling Room with a door back into the Radar Office. To the right of this entrance was the Central Filter Plot Room (CFP) with a wooden staircase into a lower level room known as the 'udder'. This was designed for the Kelvin Hughes display equipment and you can clearly see the two sets of AC connectors which supplied filtered/cooled air and removed 'dirty' hot air. These two sets of trunking would have serviced the two KH projection units, these would have had a large swivel mirror between them

allowing either to be used to project an image to the projection table above and allow in-line servicing. This room would have also contained a small darkroom and film store. The pit is dry and the wooden stairs are safe to use. The CFP had its own doorway into the corridor. The fourth doorway would have led to the GPO apparatus room and the final doorway led to the air conditioning plant room; this has been stripped of most of its plant, only part of the

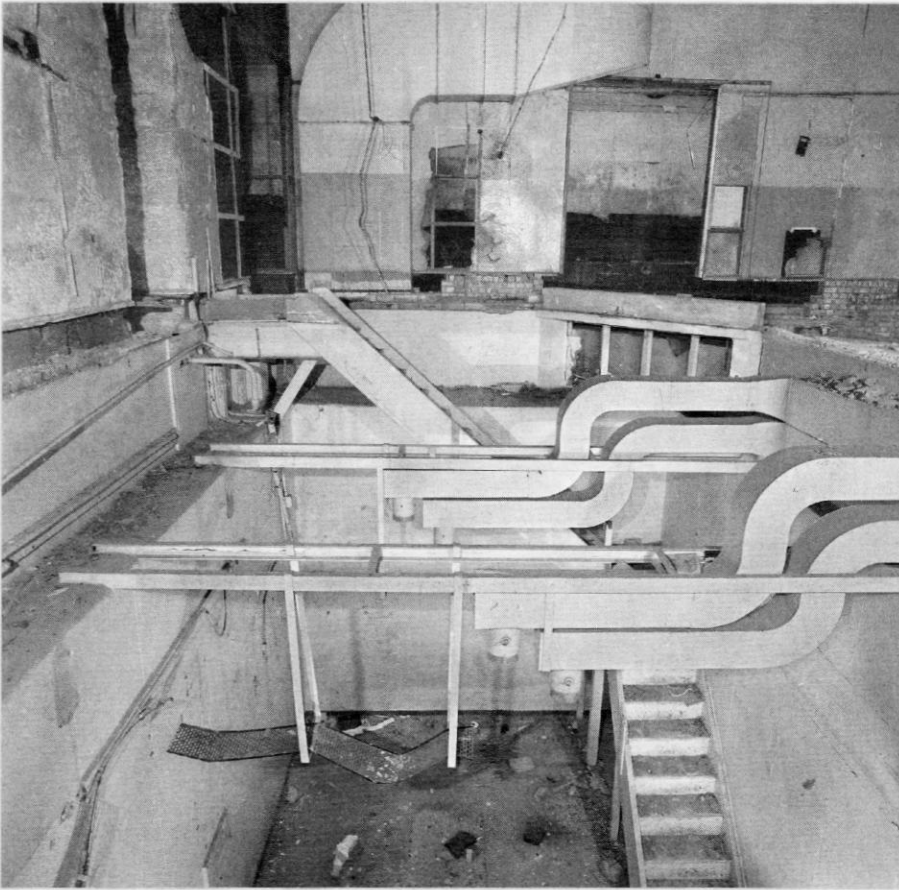


The air conditioning plant room - photo by Nick Catford

air handling system and a bank of filters remain in place. There was no secondary floor in this room with steps down from the corridor.

On the right the first doorway led to the intercept cabin and the second to the technical officers office; the wall between these two rooms has been removed. The next rooms are in the following order: store, RAF lavatory, Officers lavatory, WRAF rest

RAF Trimingham – CEW Rotor Radar Station



The pit for the Kelvin Hughes photographic display unit - Photo Nick Catford

room leading into the WRAF lavatory. There is a hatch from the WRAF rest room into the small kitchen. Beyond the kitchen is the RAF rest room with another hatch into the kitchen. The two remaining rooms are for electrical switchgear and then the radar machinery room.

the opposite (seaward) side of the road. There is also a large single storey brick building, this was the Type 80 Mk1 modulator building; there are also the bases of several WW2 huts. In recent years this has been put to farm use and the whole site has recently been securely re-fenced.

Beyond the plant room the corridors dog legs right and left site of a second pair of blast doors past the location of the air conditioning coolers (only trunking remains) and gas filtration plant (nothing remains) on the left. Opposite the filtration plant was the sewerage pump room (pumps removed) and its sump. The tunnel then ends at a wall which would have contained a metal staircase of several flights leading to the emergency exit, this has been filled with rubble and soil and there is no evidence of it on the surface.

Trimingham is located on Beacon Hill on the North Norfolk Coast between Cromer and Mundesley. The site originally consisted of 10 acres on both sides of Mundesley Road but now only the southern part of the site is occupied by the RAF. Three radar plinth and two gantry bases and a frequency changer building all survive on the standby generator was located on the domestic camp which has now been completely cleared. Externally a rest room, lounge and vestibule are located in a new portacabin to the south west of the guardroom. The site has remains of numerous metal containers for the once mobile radar head.

Sources:

RCHME Survey report on RAF Trimingham (1998) by Wayne Cocroft, PRO Files AIR 29/167 & 168, PRO Files AIR 2/10984 August 1952 listing equipment changes when Type 80 installed, PRO Files AIR 8/2032 1 January 1954, RAF Air Defence Radar Museum Neatishead, Bob Jenner, and Keith Ward



The Type 80 modulator building - Photo Dan McKenzie

From Nick Catford

London Calling

How the BBC took refuge underground in World War II

In the words of so many radio announcers "...we now take you over to Broadcasting House."

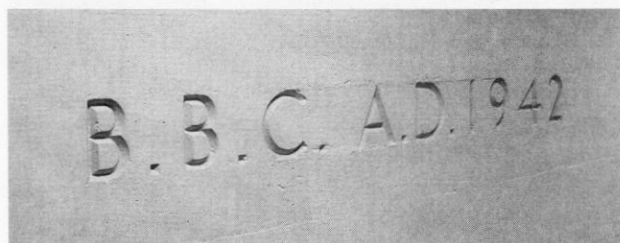
The latter end of the 1930s was a period of considerable expansion for the BBC. Radio audiences had never been higher, whilst viewing numbers for its fledgling television service had reached 20,000 by the year 1939. This factor combined with preparations for war, kept the BBC's planning and installation teams extremely busy.

Pressure on facilities in London led to the opening of five new studios and recording rooms in a former skating rink at Maida Vale in 1935 but this provided only temporary respite. A more radical solution was to extend Broadcasting House itself and in 1938 plans were unveiled for an architecturally impressive extension that would more than double the size of the building and provide new television studios conveniently located in central London. Dubbed 'London's New Radio City' and 'The Empire's Radio Centre', the proposed enlargement would have given Broadcasting House a far more balanced aspect than the cramped appearance it originally had (and still has to this day).

Site clearance was complete by the end of the year and contracts were let for excavating a huge 'tank' that would enclose five new underground studios and provide foundations for the new extension. Occupation of the entire building was scheduled for 1940, although in the event war broke out before construction work could begin. This grand new headquarters facility reflected the BBC's policy before the war, which had been to concentrate radio studio and control facilities at a small number of locations. This decision had to be reversed after the outbreak of war when the vulnerability to air raids was realised.

Contingency plans

In 1938 all public utilities and authorities embarked on air raid precaution measures and the BBC was no exception. Radio Pictorial magazine reported in May 1938 that preparations were well under way for gas-proofing the underground tunnels leading from Broadcasting House where, three floors below ground, the air conditioning pumps were being made gas-proof. The artesian well in the basement of Broadcasting House, although sealed, could be opened within half an hour and this would provide the continuous supply of filtered water necessary for producing oxygen by chemical means in the gas plant. A supply of anti-gas tents had also been purchased. What benefit these facilities subsequently provided is not known. The tunnel referred to is probably the one that led to the building called Egton House (now demolished). In a separate measure the BBC undertook a policy of dispersing departments to safer venues around the country. The variety



This artistic lettering leaves no doubt about the Stronghold's date of construction [Roger Beckwith]

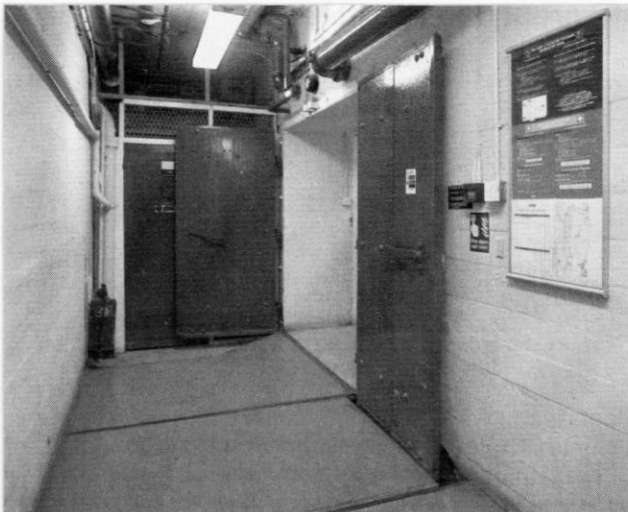
department went to Bangor in north Wales (where the County Theatre was used), a large proportion of entertainment staff to Bristol, drama department to Wood Norton, religious, music and Children's Hour personnel to Bristol and Bedford, research department to Bagley Croft (Oxon.), station design & installation to Droitwich, equipment department to Hampton (just outside Evesham), publications to Wembley and administration to Bletchington near Oxford. New studio facilities were established in Bangor, Bedford and Bristol. Aldenham Hall, near Elstree, Herts., was converted by the BBC from a country club into five studios for overseas services and also as a switching centre for programme distribution circuits for home and overseas listening. In spring 1939 and using an intermediary for secrecy, the BBC bought Wood Norton Hall in Worcestershire, once the home of the Duke of Orleans and later a preparatory school. Work was put in hand to convert the place into a self-contained broadcasting centre and monitoring station.

Going underground

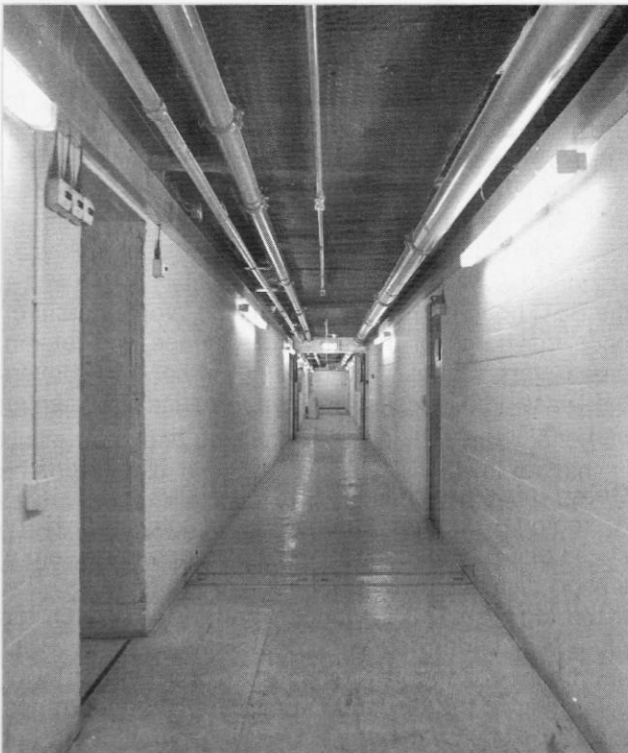
At regional centres around the country subsidiary studio and control centres were provided in miniature a short distance away from the existing facilities. The same logic applied in London and in the search for protected underground accommodation, the BBC approached London Transport. Consideration was given first to the disused Drummond Street entrance to Euston station (Northern Line) in October 1940 but the BBC decided not to pursue this once a more radical scheme was conceived. Frank Pick, from 1933 to 1940 the Vice Chairman of London Transport, had taken a new post as Director General of the Ministry of Information (Moi) and in this role he wrote to his old colleague J.P. Thomas, recalled from retirement to take charge of tube shelter arrangements at London Transport. "A stroke of luck" is what he called the opportunity as the BBC now embraced a far more ambitious solution.

The BBC was now requesting the LPTB to drive two station-size tunnels northward from Oxford Circus towards Broadcasting House for studio and broadcasting purposes at its own expense. Pick

RAF Tunnels London Calling



Looking north on the east side approach to the stronghold at the gas tight doors. [Nick Catford]



A central spine corridor runs the length of the Stronghold at Broadcasting House, with rooms on either side. Fluorescent striplights, seen in this recent photograph, are the only significant change to its fairly basic facilities. [Nick Catford]

could hardly contain his passion for the project since it could be tied in with the reconstruction of Oxford Circus station, "provided for free", and the MoI would support the scheme. For all of Pick's enthusiasm, this was not the opportunity that it appeared since London Transport had firm proposals for improving Oxford Circus that did not involve rebuilding practically the entire station and shortly afterwards the BBC was informed that "any low level tunnels built for the BBC will have to be entirely separate

from any interests of the LPTB". Plans drawn up by London Transport envisaged a tunnel of 26ft internal diameter with accommodation on two floors. It would lie 75 to 80ft below ground, with access by an 18ft diameter shaft and a 12ft emergency shaft. The BBC decided that it should lie below the part of the Broadcasting House extension site that had not yet been excavated (Site No. 2) and on 30th December 1940 the BBC's Civil Engineer wrote that the proposal seemed "highly probably to go ahead".

Change of plan

The Treasury clearly had other ideas and following discussions with the MoI it was decided to abandon the tunnel scheme in favour of a first-stage development of the Broadcasting House extension for which basement retaining walls had already been built (Site No. 1). This decision was communicated to London Transport in May 1941. Work started soon afterwards, resulting in a 'complete broadcasting station in miniature' built underground at the rear of BH (as Broadcasting House is tagged in BBC circles) along Duchess Street.

Known as 'The Stronghold' and first revealed to the public at large in the BBC Yearbook for 1946, this underground structure contained studios, recording rooms, a control room and offices, all under the shield of a concrete roof 9ft 6in thick. There was also a generator room and a small canteen, all laid out on either side of a spine corridor with gas doors and staircases for access at either end.

Completed in November 1942 and linked by line and radio to transmitters at Brookman's Park and Daventry, the Stronghold was intended for emergency use only. Fortunately it was never needed since although the main Broadcasting House was bombed on several occasions, it did not sustain damage serious enough to cause loss of programmes. The worst damage to Broadcasting House occurred on 15th October 1940, when a 500lb bomb landed in the music library, killing seven people. Bruce Belfrage, who was reading the nine o'clock news as the bomb exploded, paused briefly as he heard the noise and then finished the bulletin without stumbling. Several bombs subsequently left their mark on the outside of the building.

The Stronghold figured as a kind of last resort, along with Wood Norton (Evesham) in the BBC's planned scheme for evacuating studios. According to a document entitled 'Emergency Evacuation of London Premises' undated but almost certainly prepared in October 1942:

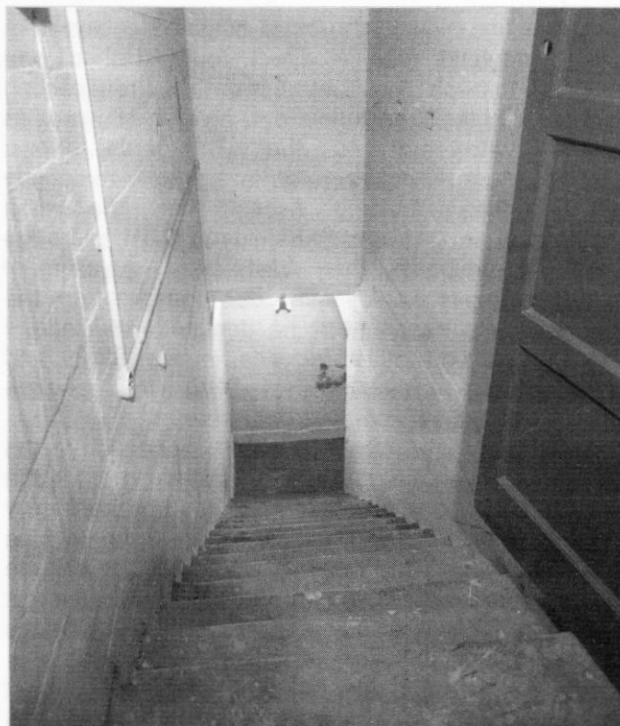
The Stronghold and premises at Evesham are general reserves for all services. Within the limits of accommodation and facilities available, the Stronghold is a last reserve for any or all of the Corporation's services. It is also equipped so that Home News, News Talks and Presentation, could

London Calling

transfer to the Stronghold as soon as News Agency and Recording facilities were provided. (The Stronghold is reached through the gas-proof door, LG2, opposite the Lounge, on the lower-ground floor in the north-east corner of Broadcasting House. Keys are in the possession of the Duty Officer, Duty Room, B.23). Moves to Evesham or the Stronghold will be decided by the Director-General in the light of prevailing circumstances.

A total of 10,000 tons of concrete was used in the Stronghold's construction and it was designed from the outset to allow an extension of Broadcasting House to be built above later on. That said, it was an awkward structure to incorporate into later construction as the Stronghold is somewhat deeper than the lower ground level of Broadcasting House (one floor down from the ground floor and in fact above the level of the basement studios) but above the level of the basement of the BH Extension as eventually constructed. Built into the Stronghold is a door with a staircase leading down and ending in a brick wall, intended to give access to the basement level of the Broadcasting House extension originally intended. The latter was finally opened in 1962, although not to the elegant designs of 1938 nor on exactly the same alignment. Currently the way into Stronghold is through the basement of the current extension building, although when originally constructed it stood on its own, outside the confines of Broadcasting House.

Working conditions in the Stronghold are not recorded, possibly because it saw little actual use during the war. One of the few who remembers the place is Roy Hayward, who worked as a Junior Maintenance Engineer (JME) in London Control Room (LCR) at Broadcasting House from 1942 to 1943. He recalls, "We were not brought into contact with the Stronghold at all and we were told it was to be the new, bomb-proof control room of the future. I do, however, remember that I used to park my bicycle in the entrance to the Stronghold alongside a few cars and motorcycles that were using the space for parking. This was on the east side of Broadcasting House in Hallam Street, where there was a sort of slope down from the road level into the depths. The slope was shut off by temporary doors or barricades several yards in from the road and I seem to recall a low wall beside the pavement enclosing the parking space in front of this slope. It was, of course, a building site and as such we were not told much about its purpose. I believe there was a large double-door entrance to BH next to the low wall that was used for the catering dept and other deliveries. It was a tradesmen's entrance I suppose and used on one occasion I believe for admitting the King and Queen (or is that apocryphal make-believe?) Nobody I knew ever visited the Stronghold in my day and the place did not come up in



Stairway down to an access point from the Broadcasting House extension. The extension was never built and the stairway has always ended in a brick wall round the corner to the right. The basement and sub basement of the postwar building went much lower and that access point was of no use. [Nick Catford]

conversation at all. We were reticent to enquire about things we did not understand as the war was on."

Incidentally, the Stronghold is the same protected accommodation that Peter Laurie described in *Beneath The City Streets* but mistakenly assumed to be at the Maida Vale studios.

Protected cables

The Post Office had an obvious role providing many essential lines and facilities to the Stronghold and to BH, both for internal communication and for taking broadcast programmes from the studio to the transmitters. It is reasonable, therefore, to assume that a cable route was provided at deep level for this purpose.

Rumours abound within the BBC of a tunnel connection to the Bakerloo Line of the London underground, which runs so close that the rumble of trains is frequently heard in talk programmes on Radio Four. Searches of the BBC, BT and London Transport archives turned up nothing to confirm this speculation but a letter in the BBC's *Prospero* magazine for retired staff in 2002 lent considerable support in favour of this contention. The letter's writer was the 91 year-old L.G. Smith who joined the BBC in 1929 and retired in 1972. He explained that in addition to a connection to the control room in

London Calling

Broadcasting House, the main outgoing cables from the Stronghold took a direct route (rather than passing through the control room in Broadcasting House) into the tube tunnel and away northwards to Maida Vale and to the Emergency News Headquarters (ENH) secreted in a private residence at Finchley, providing access into the main distribution network and transmitters. If BH had been rendered unusable then 'last ditch' government announcements would have been possible from the Stronghold to transmitters, he declared, and indeed the studios and other facilities in the Stronghold would have enabled the BBC to continue broadcasting a service of programmes.

It is still unclear whether the cable connection to the tube tunnels ran direct from the Stronghold or via the sub-basement of Broadcasting House but the former is more likely. Mr Smith understood a simple pipe connection was used and this would accord with the 12-inch bore steel pipe connections provided for cables from the War Office and Air Ministry buildings to the Whitehall cable tunnel system.

It is unlikely that the tube connection is still in use but its application was certainly foreseen during the Cold War. Treasury files at the Public Record Office discussing the BBC's planning to ensure broadcasts in the face of any future hostilities are one such place where this scheme is mentioned. The notes of a meeting held 12th March 1954 to discuss capital expenditure on civil defence include mention of financial provision to be made for "links between the BBC citadel in London and the Post Office deep-level cable system". A sidelight appears in a minute written 24th May 1954 by a BBC official: "While these [deep level cable] tunnels are not at a sufficient depth to safeguard against a hydrogen bomb exploding above, they would afford protection under other circumstances."

Four months later a BBC report to the Treasury set out 'the BBC Deep Level scheme' stating that plans had been made to connect the BBC Stronghold to the Post Office deep-level cable tunnels, involving the sinking of a shaft from the Stronghold to the Bakerloo Line at a cost of £56,000. Although not stated in the document, the cables would run southbound and connect with the Post Office network at Trafalgar Square. The BBC looked to the government for a decision and again sought advice the following year in view of the increased threat from the Soviet H-bomb. Although another note in the same file said the 'deep-level outlet scheme' had been abandoned in July 1955, this did not end the matter. A later document of 31st January 1957, relating to an internal Treasury review of the BBC's proposed civil defence expenditure plans for 1957/58, says under the heading Deep Level Outlet:

There seems to be some mystery about this. This was, I believe, a scheme to connect the BBC

stronghold with the GPO deep level communications system in London. The project was planned with the Post Office and was to be undertaken by them. It was originally expected to cost £36,000 (a figure of £20,000 has also been mentioned) but was abandoned in July 1955. We do not know why £5,000 was included as 1956-57 expenditure. Nothing has been spent up to 30th September 1956.

There is no factual evidence whether this new cable scheme was ever built. The BBC's written archives have not been able to trace any information and whilst British Telecom would know if it had laid cables in such a tunnel, it does not discuss matters relating to customers' private installations, meaning that the later history of the Deep Level Outlet remains an enigma.

More subterranean studios

Returning to World War II, the Stronghold was not the BBC's sole underground accommodation in central London. The growth of overseas broadcasting for presenting credible news reports and entertaining British forces abroad brought an urgent need for additional studio accommodation, preferably protected to avoid disruption by enemy bombing.

Among these were the Criterion Theatre (Piccadilly Circus), the Paris and Monseigneur news theatres (Waterloo Place at the bottom of Lower Regent Street and Marble Arch respectively) and a studio at Bush House belonging to the J. Walter Thompson advertising agency. All of these were underground and hence considered 'security areas'. The Paris and Monseigneur studios were in sub-basements below ground level; the latter was used for programmes of the General Overseas Service such as *Marching On*. After Broadcasting House was bombed on 15th October 1940 the Criterion Theatre became the home of variety producer Cecil Madden—literally. After it was requisitioned by the BBC (all London theatres had been closed on government instructions), Madden and his Programme Assistant, Jill Allgood, not only worked there but also slept in the theatre. Her sleeping quarters were in a box next to the Royal Box, whilst her boss slept in the Upper Circle. Famous artistes who broadcast from the Criterion studios included Edmundo Ros and his band, also the singer Vera Lynn. It was also here that Petula Clark made her broadcasting debut. On the Saturday afternoon programme *It's All Yours* in October 1942 she was one of a party of children invited to record messages to relatives in the forces overseas. Although only nine years old, she asked to sing with the orchestra—and her wish was granted.

The Bush House studio of J. Walter Thompson had been opened in 1937 and was built specially for recording sponsored programmes broadcast on commercial stations such as Radio Luxembourg and

London Calling

Radio Normandy that sidestepped the BBC monopoly before the war broadcasting popular programming to Britain. It had been designed along the latest principles with no expense spared and was built below the building above a former basement swimming pool (its ceiling is a few feet below pavement level). The studio was acquired by the BBC in September 1940 and subsequently between January 1941 and March 1942 considerably more accommodation in Bush House (not all underground) was taken by the BBC. By the end of the war there were 15 studios in the building, which remained for sixty-odd years the hub of the BBC's World Service. The old JWT studio is known today as S16.

However, by far the most significant below-ground studio complex of the BBC during the war was at 200 Oxford Street, where the east block of Peter Robinson's department store was requisitioned in June 1941 for the BBC's overseas services (see endnote). Known operationally as the 'PR Building', the actual studios and control room were 50 feet below ground level in the basement, protected by heavy steel reinforcement applied to the floor and ceiling of the ground floor. Considered opinion has it that the studio had lines to Broadcasting House connected via the Central Line tube tunnels and Oxford Circus.

Creating a studio centre from scratch under war conditions was an immense challenge but one to which BBC engineers responded with a degree of flexibility which managed to combine a utilitarian approach with a touch of imagination and engineering memory. L. G. Smith, mentioned above, was the engineer responsible for the planning and installation of the control room and studio equipment. He states: Before the war an installation of this size would have taken years rather than months since all equipment and interconnecting cables would have been individually designed. This was quite unacceptable in wartime. Many components were unobtainable; studio cubicle desks were made from office tables with plywood backs and sides. Microphone stands were derived from electric conduit components. Shortage of components was not the only problem; all circuits were lost when rats found their way into the microphone skirtings and bit through the lead covered cables to get at the wax inside. Nevertheless the whole installation, commenced in December 1941, was handed over for service for Overseas Programmes during May and June 1942.

For many reasons the PR Building was not an ideal location for broadcasting. Conditions were cramped, ventilation was poor and noise from passing trains was clearly audible on programmes. Pawley's official history of BBC engineering also mentions that the studios at 200 Oxford Street were so close to the tube tracks that the performers' ribbon microphones picked up a high-pitched hum caused by harmonics

of rotary converter noise carried on the conductor rails.

One more underground (in both senses of the word) radio studio was that of ABSIE, the American Broadcasting Station in Europe. Operated under the auspices of the U.S. Office of War Information, this station went on air on 30th April 1944 as part of the Allied preparations for the invasion of Europe. Technical assistance was provided by the BBC, with a studio centre underneath the Gaumont-British offices at Film House, 142 Wardour Street in Soho. The station broadcast news, talk and music in many different European languages to promote the Allied message, initially to prepare the people of occupied Europe for liberation, then after D Day to incite the foreign workers in Germany to sabotage the German war effort and finally, as the war neared its end, to urge the German people and armed forces to surrender.

ABSIE came to some prominence as the station that broadcast the remarkable 'lost' broadcasts in which the Glenn Miller Band broadcast in German to the Wehrmacht. The programmes were recorded at EMI's Abbey Road studios and introduced in German, with Miller himself reading from a phonetic script. Six half-hour programmes were recorded by the band and broadcast on Wednesdays starting 8th November 1944 as Musik für die Wehrmacht (Music for the Wehrmacht).

ENH identified

Mention was made of ENH, the BBC's wartime emergency news studio in Finchley. Its location was a private residence by the name of Kelvedon in Woodside Avenue, Finchley, N12. Houses in this road were not numbered in those days but a street directory indicates that Kelvedon was on the west side, the sixth house counting from the south end of the street. Roy Hayward (mentioned earlier) remembers and he recalls how he and his colleagues were required to take spending a night shift of four consecutive nights at ENH.

Emergency News House was in the basement of a very anonymous looking but large victorian house, set back from the road in its own splendid grounds at Woodside Park near Finchley in north London. It was rumoured that the house was 'allocated' to the Chief Engineer, Mr P. A. Florence, but I am not sure of this and I never saw anyone who lived in the house. It was permanently manned 24 hours a day by four engineers (following the four shifts A, B, C and D and the same shift hour patterns).

It was described to us as a place that could be used to continue broadcasting to the nation should BH become devastated by bombing. There were two studios, one of small 'news reader' size with a control cubicle underground in the basement, and another on

London Calling

the ground floor that was probably the drawing room of the house. It looked out over the garden through French doors and contained little furniture except for a middle-sized Challen baby grand piano. Underground in the basement was a control room—a long room with bays of jackfields and amplifiers carrying probably every network and programme service out of London. A small loudspeaker hung on the end wall and it was usually plugged during the night for us to hear Red Network being broadcast from 200 Oxford Street to America (I recall hearing Ed Murrow on several nights).

There was an emergency electricity power and lighting Lister diesel generator that we were required to run up just before 06.00. I always thought that this time had been specially chosen to wake up the chief engineer upstairs and not before—but then we were very young! We were also required to do a full test on all the studio equipment and, on a nice early summer's morning after the test, I would put a mic out into the garden and relay to my shift brethren in LCR in the sub-basement of BH, the sounds of the dawn chorus. Other JMEs, more musically accomplished than me, would play that Baby Grand piano quietly!

There was also another ENH located in the basement of a block of expensive flats in Grosvenor Square, diagonally across the square from the American Embassy. This was a single, unattended studio. It was always tested about 05.30 about once a month. The Senior Control Room Engineer would give one of the JMEs the keys to the entrance of the block of flats and the studio door, which was two floors down in the lift. The studio would be already plugged at the 'Lines incoming' bay in LCR to a bay position and all the routine testing of the mic, the mic leads, the plug in the wall, the clock, the lights and the TD/7 record turntable (Teddy Bear's Picnic, the BBC's standard test record, was in the rack) would be done and, before switching off the power, a ring on the internal telephone to test it and to correct the clock time if necessary and finally check that all was well with the test. Then it would be a rush to catch the 73 bus along Oxford Street to Oxford Circus and report back to the SCRE to hand in the keys and sign that the studio had been tested. I can only remember doing this about three times in the three years I was in LCR. Perhaps it was taken out of service eventually. Then again we JMEs were not supposed to know everything that was happening—there was a war going on!

Wartime broadcasting strategies

Broadcasting of course played a vital role keeping the population informed during the war. Protecting the studios and means of making programmes was one thing; making sure they were heard was another and this meant ensuring that they went out over the

airwaves. Under peacetime conditions the most cost-effective means of broadcasting is to use a small number of high-power transmitters covering as broad an area as possible. In war the vulnerability of this approach was obvious; relatively limited enemy action against the handful of transmitters could silence the BBC and eliminate the government's direct link to the population at large. Worse, this small number of powerful radio stations could act very effectively as homing beacons for enemy aircraft.

An alternative strategy was needed and a decision was taken at very high level to establish a secondary network of low-power transmitters scattered across the country that would not assist the aggressor and could maintain transmissions if the high-powered stations were taken off the air at the instruction of Fighter Command when air raids were expected. Known as the H Group stations, these had a range of about 10 miles around and the intention was that under normal circumstances they would relay normal BBC programmes but they could also be operated by local authorities or Regional Commissioners to broadcast special bulletins and instructions if they were cut off from central government.

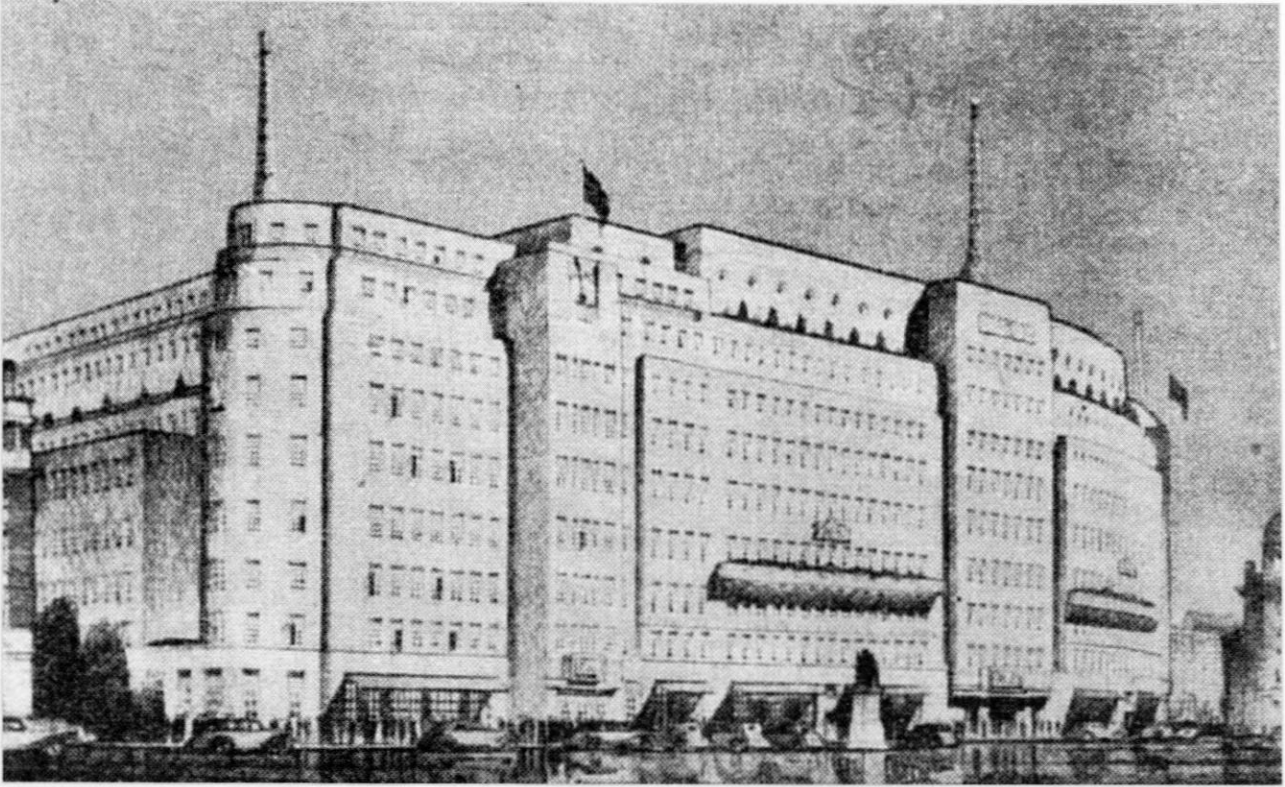
Work started on establishing these stations in autumn 1940 and although this put great strain on engineering resources, by the following year some 60 had been put into service, with a few more following down to 1944. Most of them were erected on municipal property, with transmitter and control equipment generally protected or underground and equipped with aerials slung from water towers or industrial chimneystacks. The system worked remarkably satisfactorily, even during the heaviest air raids of 1940.

Geoff Leonard, who started his BBC career in 1941 explains, "The 'H' Group transmitters were a chain of sixty low power medium wave transmitters varying from 100 watts to 300 watts and all transmitting the Home Service on the same wavelength of 203 metres. They served a dual purpose. First, they didn't have to be closed down on the approach of enemy aircraft, because their range was reputedly only a few miles (although each transmitter carried out a test transmission once a month, according to a schedule, so that Tatsfield, the BBC's monitoring station, could check the accuracy of the frequency of transmission and make sure it had not drifted). Sixty transmitters not quite on the same wavelength would have made reception horrible with superheterodyne whistles. The second purpose was to provide regional devolved governments a voice to the local population in the event of a breakdown of central control. Many of these stations were kept on as part of the post war civil defence arrangements."

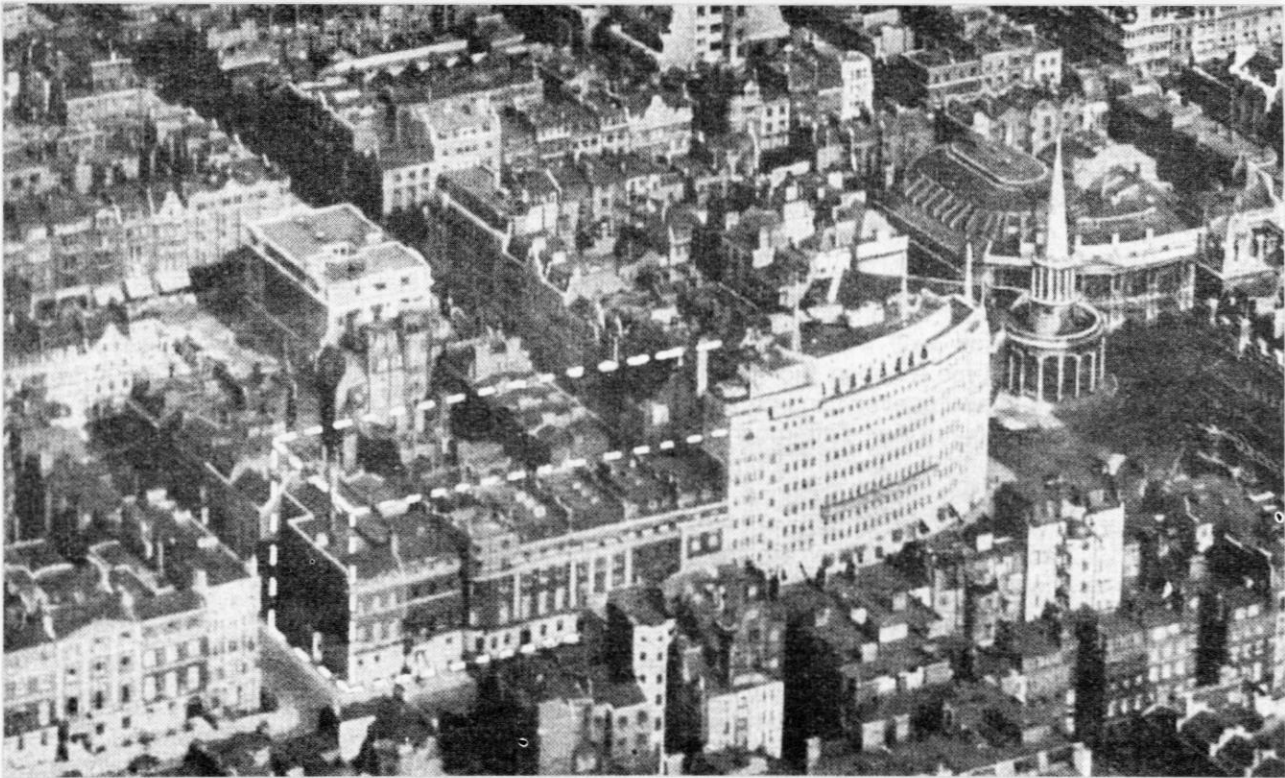
Planning for invasion

Very adequate details of the construction and

London Calling



A glimpse of a London landmark that was never built. The Broadcasting House extension would have transformed the original truncated façade into a truly impressive headquarters building. The view is from Portland Place looking south-east.



The pecked lines in this aerial view show how far the radio and television centre of the future was to be expanded.

London Calling



The Stronghold was a complete broadcasting centre in miniature built next to Broadcasting House during the war. In this view dated November 1945 the 9ft 6in-thick concrete roof (removed later to facilitate building the subsequent Broadcasting House extension) is clearly visible. The picture, looking north-east with Duchess Street on the left and Hallam Street on the right, shows protected air and exhaust vents, with a rectangular vent into the corridor. The protected porches have been removed but a temporary single-storey building is visible, along with the much deeper shored excavation for the basement of the abandoned pre-war extension scheme. It is just possible to make out the low-level door at the bottom of the staircase, facing into the excavation. [BBC]

a large private house in its own grounds. There was a very small control room and three studios, all nicely done out in a pale yellow wall wash, and with a microphone table and a Type A ribbon microphone in each. The chore was to switch everything on and do a voice test from each. It made a nice afternoon out!" The minutes of the Studio Equipment Committee meetings show how the new stations were requisitioned and fitted out. Much of the work was in hand by May 1942 and nearly all work on the scheme was complete by the autumn. At the end of the war they were returned to their original condition, with most vacated already by the end of 1945. Mr Bennett-Levy, the collector and dealer who bought these papers at auction, said: "Nobody knew about this at all; it was kept hush-hush. No-one would ever admit that the possibility of being invaded and conquered was very real. All these studios were meticulously returned to their original condition, so no

clues were left that these studios had ever been made up."

Precautionary constructions such as these provided for use in national emergencies are known as Deferred Facilities or 'DF projects' within the BBC. Within the Post Office and BT they are termed Deferred Services but the context is identical.

Old plans for a new war

Consideration of broadcasting under wartime conditions, happily abandoned with the end of hostilities in 1945, was hastily renewed with the advent of the Cold War. The position in 1957 was little changed, however, with plans in place for national coverage of two programmes on medium wave plus separate coverage for Wales and Northern Ireland coupled with Scotland. Just as in World War II, the high power medium wave transmitters would operate in synchronised groups, subject to closure on

London Calling

instruction from Fighter Command. Out of a network of low-power medium wave stations, not subject to closure, 54 of the 73 planned stations had been installed but installation of the remaining 19 had been stopped pending a revised scheme for wartime broadcasting that would enable civil defence regional broadcasting.

Known as Wartime Broadcasting System (WTBS) and devised by the government in conjunction with the BBC, this new scheme was intended to maintain a radio service for informing the public during national emergency. The BBC report *Home Sound Broadcasting in War* dated July 1957 clarifies that the nucleus would remain in London, operating from the Stronghold until it becomes untenable or the seat of government leaves London. WTBS was thus seen to form an integral part of the government's civil defence strategy and in the event of hostilities would provide a single national programme of news and information during the transition to war period and post-attack.

END NOTES

London's New Radio City— a contemporary description of the Broadcasting House extension that never was.

Excavation of the Portland Place site upon which Broadcasting House will be extended to more than double its current size is to begin in early 1939. More than a million cubic yards of earth will be removed and the depth to which the building will go—54ft below pavement level—will be lower than the vaults of the Bank of England. Broadcasting House is probably London's deepest building. So large will be the volume of the pit, from which the superstructure will ultimately rise that it would have a capacity of nearly ten million gallons of water.

The architects are Messrs Val. Myer and Watson-Hart, FFRIBA, and Messrs. Wimperis, Simpson & Guthrie, FFRIBA, in association with Mr M. T. Tudsbery, MInstCE, the Civil Engineer to the Corporation. Messrs Higgs and Hill Ltd have been awarded the contract for the excavation and for the erection of retaining walls around the site, which has already been cleared. The work will be complete by about the middle of next year. Soon afterwards work will begin on the construction of the new building, which it is hoped will be ready for occupation by the end of 1940. This work will be the subject of a later contract.

The first stage of the present work will be the opening of a trench around the site, some thirty feet wide and fifty-four feet deep, in which self-supporting retaining walls will be constructed to withstand all external

pressure. Asphalt will face these walls and will be returned, beneath them, and laid over the whole of the site. Five feet of 'loading concrete' will be superimposed upon it. The main structure, therefore, will virtually be built into a huge 'tank'. The lower part of the tank below the standing level of sub-soil water, a fact which will demand special measures to ensure that the asphalt seal is perfect at the junction of the new tank with that of the existing building, to compensate for settlement when the weight of the new building comes to be taken upon the foundations. The site area at ground floor level is 20,950 square feet, compared with 17,390 square feet of the existing building.

The elevation—one of five schemes sub-mitted—has been approved by the Royal Fine Art Commission. The architectural treatment of the extension will continue and amplify that of the existing facade to Portland Place, the two portions of the building forming a complete architectural entity that will be both dignified and in harmony with its surroundings. Five underground studios will be in-corporated in the extension, and, in order to eliminate all possible risk of extraneous noise, each will be constructed as a separate shell, floated and isolated from the building itself. A General Purposes studio will be 80ft long, 54ft wide and 30ft high. Three Dramatic studios, an 'Effects' studio and a number of rehearsal rooms are also being provided.

Above ground-floor level the extension is designed as an office building, with rather more accommodation than Broadcasting House has at present. A Control Room suite will be situated on the seventh floor and this will be in addition to the present Control Room. On the sixth floor will be a Staff Rest Room, while a restaurant with accommodation for nearly three hundred people is to be built on the top (eighth) floor. A light court will occupy the centre of the extension above first floor level; the building itself will have a maximum height of approximately 110 feet.

Department stores as offices

Earlier in this chapter it was noted that the BBC took over part of the Peter Robinson department store for office and studio accommodation. In fact the building also served as overflow accommodation for COSSAC, mentioned in Chapter 6. This was not a unique arrangement, either. The Air Ministry occupied part of the Harvey Nichols building, whilst the India Office took part of the Peter Jones department store. The U.S Headquarters Air Service Command occupied part of the John Lewis building.

From Andrew Emmerson



What's in a name?

Those of us who study the inhabitants of underground (and un-underground) buildings of the past frequently come up against a confusing array of names and acronyms. Here are some that I have collated over the years with the help of the WWW and SubBrowsers.

If anyone wishes to correct me please feel free! Note that these notes apply to the World War II and Cold War period, not necessarily to the present day (on which I never comment)

Andy Emmerson.



The MI5 logo

First of all, the various MI agencies, all culled from websites:

MI (Military Intelligence) had agencies numbered up to 19, but not all at the same time. Most were folded into MI5, MI6 or GCHQ after the war. I've found the following after a few web searches: **MI1** (Codebreaking), **MI2** (Russia and Scandinavia), **MI3** (Eastern Europe), **MI4** (Aerial Reconnaissance), **MI8** (Military Communication Interception), **MI9** (Undercover operations), **MI10** (Weapons analysis) **MI14** and **MI15** (German specialists), **MI19** (PoW debriefing), **MI17** (Military Intelligence "Head Office"). Conspiracy theorists will have you believe that there is still a clandestine **MI7** dealing with matters extraterrestrial.

Allan, Wimbledon UK

MI5 deals with threats inside the UK, and **MI6** combats overseas threats, as anyone who has seen a recent James Bond film knows from the

shots of **MI6** headquarters at Vauxhall in London.

James, London UK

MI5 - Domestic intelligence, **MI6** - foreign intelligence. Interestingly, that makes James Bond a member of **MI6**.

J R Scott, Aberdeen

MI5 is formally known as the Secret Service, and deals with matters internal, and **MI6** should be known as the Secret Intelligence Service and deals with external affairs.

JB, London

MI5 is the British security service while **MI6** is the British foreign intelligence service. Crudely, **MI6** are "our" spies while **MI5** is there to catch "their" spies. It gets a little more complicated in that **MI6** has its own "counter-intelligence" section. "MI5/MI6" were the original designations when both organisations came under the War Office, now the MOD - "MI" stands for military intelligence. Their official names (acquired in the 30s) are the Security Service (**MI5**) and SIS, the Secret Intelligence Service (**MI6**). The former is responsible to the Home Office and the latter to the Foreign Office.

John Burnes, Manchester

According to an American PBS documentary on the Allied Prisoners of War held in Colditz Castle during the Second World War, **MI9** existed primarily to aid the escape of British soldiers held captive. One of the principal techniques **MI9** used was to mail contraband to prisoners hidden in Red Cross care parcels. German money was hidden inside a Monopoly board, and decks of playing cards were sent containing military-grade maps of Germany. *Christopher, Boston, Massachusetts, USA*

MI-8 was a cover name for S.O.E.—Special Operations Executive, the *ad hoc* covert ops and dirty tricks organization during WW2. See M.R.D. Foot's SOE, The Special

What's in a name?

Operations Executive 1940 - 1946. As mentioned above, **MI-9** was the escape and evasion apparatus. (Mr. Foot has apparently also written a book on that entity.)

*John C. Watson, Amherst, MA,
U.S.A.*

MI1(b) seems to have been a crypto unit for the Royal Flying Corps in WW1, as part of the War Office, and it and Room 40 (Admiralty cipher mob) provided the founding 25 officers for the Government Code and Cipher School in 1919. GC and CS moved to Bletchley Park in 1938/39. **MI1(c)** was part of the Secret Service Bureau set up in 1909. The **SSB** had a 'Foreign Section' which in 1916 was called **MI1(c)** and run out of the War Office. By the end of the war it was run by the Foreign Office. The **SSB Foreign Section [MI1(c)]** later turned into the **SIS** (secret service); **MI1(c)** seems effectively to have been an early version of **MI6**.

SIS was called **MI6** when it covered Military Intelligence gathering activities, separate from political espionage activities. **SIS/MI6** used espionage to acquire intelligence, and were a foreign operation (**MI5** course, is the home equivalent, though nominally counter-espionage). During WW2 it was run out of the War office, and generally called '**MI**'.

MI2 was part of **MI**, responsible for Russia, Scandinavia and Eastern countries. Subsumed into **MI3** in 1941. **MI3** was part of **MI**, and was the European country section with **MI3(b)** being the German subsection. **MI3** became **MI14** in May 1940, as the Germans seemed to be important.

MI4 was involved in tactical photographic interpretation end 1941/42, but may have been a general interpretation unit; **MI8** was German army/air force signals traffic analysis; **MI9** carried out clandestine operations; **MI10** was a weapons analysis/technical unit; **MI15**

covered German anti-aircraft defences; **MI17** was a secretariat organization for the Director of **MI**; **MI19** debriefed enemy POW (taken over from **MI9(a)** end 1941).

MI1(a) seems lost in the mists of time. There were lots more groups/subgroups during the war.

John Brazier

Government Communications Bureau

The 'Government Communications Bureau' was a non-existent cover for the Secret Intelligence Service, and a brass plate with this title adorned the entrance to **SIS**'s headquarters at 54 Broadway both before and during the war.

The **GCB** had a veneer of authenticity to the extent that **SIS** then encompassed the Government Code & Cipher School which in 1942 became Government Communications Headquarters (**GCHQ**) and was based at **SIS**'s so-called 'War Station' at Bletchley Park. The current **GCHQ** at Cheltenham, now independent of **SIS**, is the linear successor to **GC&CS**.

Nigel West

Inter-Services Research Bureau

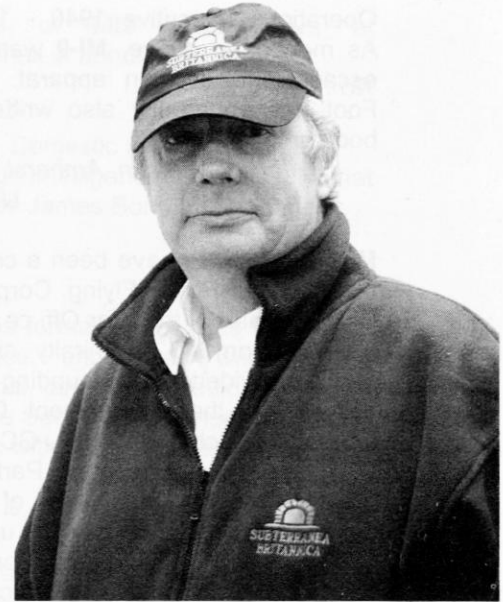
'Inter-Services Research Bureau' was a cover name for the research and development section of Special Operations Executive (**SOE**), itself an offshoot of **MI6** set up initially to help the Resistance in German-occupied countries and later expanded into a covert organisation of about 10,000 men and women. Its telegraphic address was **INREBU** and was designated as this in some official documents.

From Andrew Emmerson

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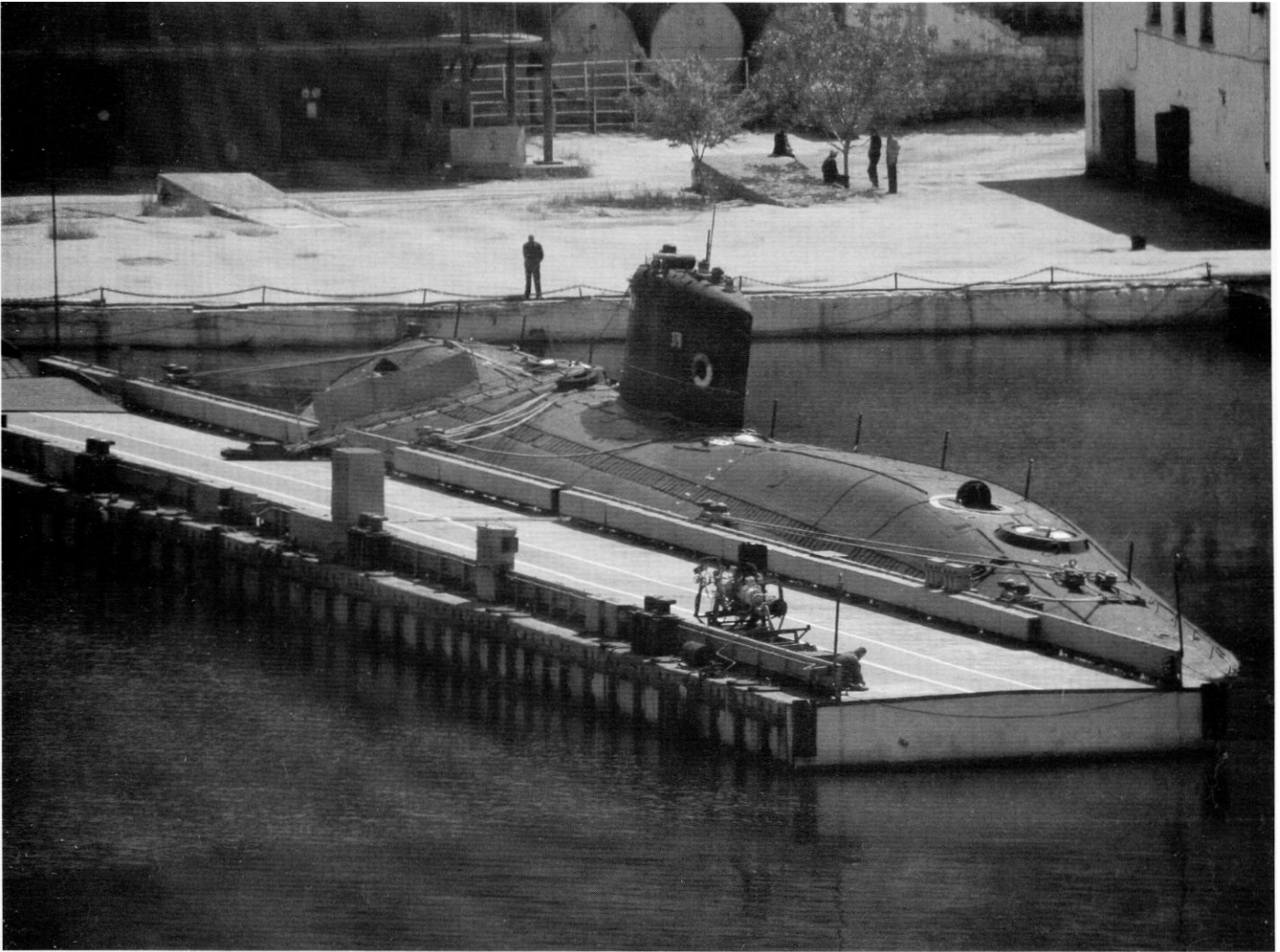
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A Ukrainian Submarine in the naval dockyard and Ukrainian Sailors on there way to the parade - Photos By Mark Bennett



